SONY

HD A/D CONVERTER BOARD

HKPF-101

HDVS

MAINTENANCE MANUAL

2nd Edition

Serial No. 12001 and Higher (UCJ)

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理などを行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual for HD A/D Converter Board HKPF-101. This manual describes the information items necessary when the unit is supplied and installed, items that premise the service based on the components parts such as alignment, schematic diagrams, board layouts and spare parts lists, assuming use of system and service engineers.

Contents

The following are summaries of the each section for understanding the manual.

Section 1 Installation

Describes information about internal switch settings, connector input/output signals and connection connector.

Section 2 Service Overview

Describes information about internal indicator indication, circuit description and note on replacement of electrical parts.

Section 3 Electrical Alignment

Describes the general information for electrical adjustment and the adjustment procedure of this unit.

Section 4 Spare Parts

Describes exploded views, parts list and optional fixtures used in the unit.

Section 5 Semiconductor Pin Assignments

Describes function diagrams and pin names of semiconductor used in the unit.

Section 6 Block Diagram

Describes overall block diagram of the unit.

Section 7 Board Layouts

Describes board layouts for every circuit board.

Section 8 Schematic Diagrams

Describes schematic diagrams for every circuit board.

Relative manual

Besides this maintenance manual the following manual is available for this unit.

Operation Manual (Supplied with this unit)

This manual is necessary for application and operation of this unit.

Section 1
Installation

The HKPF-101 is an HD A/D converter board, which is installed in a PFV-HD300/HD50A digital video interface unit (separately available) for use. For details on installation, refer to the maintenance manual or operation and maintenance manual supplied with the digital video interface unit.
This unit conforms to the 1080 transmission matrix prescribed in accordance with the ITU-R BT.709 standards. (Units which are pasted with the "MATRIX BT.709" label on the A side of the AD-144 board conform to the ITU-R BT.709.)
To set back the 1035 transmission matrix conforming to the SMPTE 240M, the unit needs to be modified separately. For details on modifying, refer to Section 1-3 "Modification for 1035 Transmission Matrix".

1-1. Internal Switch/Control Settings

AD-144 board

S5 : INPUT 1035/1080 (board panel)

Selects the number of active lines in an image area corresponding to the signal input at ANALOG IN connector.
1035 : 1035 lines (D20 is lit)
1080 : 1080 lines
Factory-set position : 1080

S7 : INPUT YP_BP_R/GBR (board panel)
Selects the signal format (YP_BP_R or GBR) according to the signal input at ANALOG IN connector.
Factory-set position : YP_BP_R

S9 : LEVEL PRESET/VARI (board panel)
Selects whether the video level of the signal output at DIGITAL OUT connector is fixed or variable.
PRESET : Fixed to a factory-set level
VARI (VARIABLE) : Video levels ($Y/P_B/P_R$) of output signals are variable with RV10, RV11 and RV12.
Factory-set position : PRESET

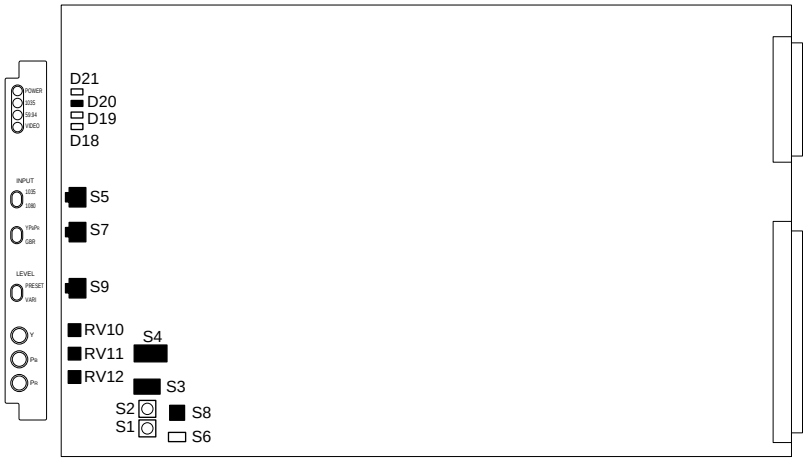
RV10 : Y (board panel)
RV11 : P_B (board panel)
RV12 : P_R (board panel)
Used to vary the output level with the switch S9 set to VARI.
Adjusts the Y, P_B or P_R level in the range of ±5 %.

S4 : Cable compensation
Select according to the length of cable to be connected at the ANALOG IN connector.
0 m : Cable compensation is not activated
10 m : Cable compensation is activated
Factory-set position : 0 m

S8 : CPU reset switch

S3 (8bit) **: Factory-use switch**
Always set to OFF.
Factory-set position : All OFF

S1, 2, 6 : Not used



AD-144 Board (A side)

1-2. Connectors and Cables

1-2-1. Connector Input/Output Signals

ANALOG IN (1125 analog signal)

BNC type, Based on BTA-S001A

Y/G IN

Y/G:1.0 V p-p (video; 0.7 V, sync; ±0.3 V) , 75 Ω

P_B/B IN

B : 1.0 V p-p (video; 0.7 V, sync; ±0.3 V) , 75 Ω
P_B : video; ±0.35 V, sync; ±0.3 V, 75 Ω

P_R/R IN

R: 1.0 V p-p (video : 0.7 V, sync : ± 0.3 V) , 75 Ω
P_R : video; ±0.35 V, sync; ±0.3 V, 75 Ω

DIGITAL OUT (1125 digital signal)

BNC type (4 channels), Based on BTA-S004A
0.8 V p-p, 1.5 Gbit/s

1-2-2. Connection Connector

Connection made with the connector panel during installation or service, should be made with the connector specified in the following list, or equivalent parts.

Indication	Connection connector
ANALOG IN DIGITAL OUT (BNC)	1-564-742-11 PLUG, BNC

1-3. Modification for 1035 Transmission Matrix

The HKPF-101 conforms to the 1080 transmission matrix prescribed in accordance with the ITU-R BT.709 standards.
To set back the 1035 transmission matrix conforming to the SMPTE 240M, proceed as follows.

1-3-1. Changing the Resistance Constant of the AD-144 Board

Change the following ten resistance constants to the constants for the 1035.
(Chip resistors mounted to side B)

Ref. No. (Address)	1035 Constants (Sony Part No.)	1080 Constants (Sony Part No.)
R203 (Q-4, 5)	470 Ω (1-216-643-11)	270 Ω (1-216-637-11)
R204 (Q-6)	47 Ω (1-216-619-11)	100 Ω (1-216-627-11)
R205 (Q-7, 8)	1k Ω (1-216-651-11)	560 Ω (1-216-645-11)
R207 (Q-4, 5)	2.2k Ω (1-216-659-11)	4.7k Ω (1-216-667-11)
R209 (Q-7, 8)	680 Ω (1-216-647-11)	2.2k Ω (1-216-659-11)
R215 (Q-6)	3.3k Ω (1-216-663-11)	2.7k Ω (1-216-661-11)
R216 (Q-6)	10k Ω (1-216-675-11)	8.2k Ω (1-216-673-11)
R493 (Q-6)	47 Ω (1-216-619-11)	100 Ω (1-216-627-11)
R494 (Q-6)	0 Ω (1-216-295-11)	470 Ω (1-216-643-11)
R495 (Q-7, 8)	120 Ω (1-216-629-11)	330 Ω (1-216-639-11)

1-3-2. Matrix Adjustment

After modifying, refer to Section 3 Electrical Alignment of the HKPF-101 Maintenance Manual 1st Edition, and perform the adjustments in Sections 3-6 to 3-10 again.
Take note that the 1080 transmission matrix adjustments and measuring devices used differ from 1035.

1-3-3. For Transmission Matrix Display Label

After modifying, erase the “MATRIX BT.709” displayed on the label pasted on A side of the AD-144 board or paste the “MATRIX 240M” label to indicate that the board conforms to the 1035 transmission matrix (conforms to SMPTE 240M).

Section 2
Service Overview

2-1. Indication of Internal Indicator

The following describes the function of indicator on the AD-144 board as follows.

Address	Ref.No.	Indication	Description
Board Panel	D21	POWER	Lit when the power is normally supplied
	D20	1035	Indicates the the number of active lines lit : 1035 dark : 1080
	D19	59.94	Indicates the field frequency of input signal lit : 59.94 Hz dark : 60 Hz
	D18	VIDEO INPUT	Lit when input signal is detected
U-1	D1	F1	Lit by the passage of +5 V (1) line
	D2	F2	Lit by the passage of +5 V (2) line
	D3	F3	Lit by the passage of –5 V line

AD-144 Board (A side)

2-2. Circuit Description

AD-144 board

HD analog signal (R/G/B or Y/P_B/P_R) input from DIF-61 board is sent through a simple cable compensation circuit to a matrix circuit and selector circuit. The matrix circuit converts the input signal level from RGB to Y$P_B P_R$ and sends to the selector circuit. The signal selected by the selector circuit according to the setting of switch S7 is sent to an analog-to-digital conversion circuit to be sampled at 37 MHz rate and be quantized by 10 bit. The Y signal is split into two paths and each is analog-to-digital converted by 37 MHz clock and its inverted clock signals. Then the two digital signals are multiplexed at 74 MHz rate. The resultant signal is changed to digital format at IC65 and is converted into an HD SDI signal (1.5 GHz) at IC67 after a digital blanking is added. Then the signal is output to DIF-61 board.

The AD-144 board is also provided with a power circuit and a detection circuit to detect a field frequency (59.94 or 60) of input signal. The power circuit consists of series regulators of +4.5 V and −4.5 V and switching regulators of +3.3 V, +1.2 V and −2 V. EEPROM on this board stores the status previous to being powered off such as the active lines in an image area and the field frequency.

DIF-61 board

The DIF-61 board is equipped with three input connectors (Y/G, P_B/B, P_R/R) for HD analog signal, and four output connectors for HD SDI signal. It also has a driver circuit for the HD SDI signal.

2-3. Optional Fixtures

Description	P/N	Remarks
Extension boardEX-331	J-6185-960-A	To extend AD-144 board
IC extractor	J-6035-070-A	To extract IC14/AD-144 board (Usable for PLCC IC with pins 20 to 124)

2-4. Circuit Protection Device

The AD-144 board is provided with two positive thermistors F1 and F3 for +5 V and −5 V respectively. This device limits a current by steeply increasing the innner resistance when it rises to a certain temperature due to overcurrent or high ambient temperature. The device being activated, the indicator beside it will go out at the same time. If activated, turn off the power and check the unit. After the cause is eliminated and the device cools off, turn on the power again. If there is no trouble, the unit will operate normally.

2-5. Note on Replacement of Electrical Parts

The AD-144 and DIF-61 boards are equipped with a high-frequency circuit (1.5 GHz) in the shielding case on each board. So every electrical part contained in the shielding case can not be replaced. If the high-frequency circuit in the AD-144 board fails, please order the HKPF-101 through the sales route for replacement. If that in the DIF-61 board fails, replace the DIF-61 board itself.

2-6. Notes on Repair Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP (Supply Code) column of the spare parts list may not be stocked. Therefore, the delivery date will be delayed.

4. Units Representation

The following represented units are changed or omitted in writing.

Units		Representation
Capacitance	μF	uF
Inductance	μH	uH
Resistance	Ω	Abbreviation
Temperature	˚C	XXX-DEG-C

2-7. Note on Replacement of CPU

IC14 on the AD-144 board is a CPU with a built-in ROM. The designation of the program is suffixed to the IC name. As the ROM version is changed, the designation of the suffix is also changed. Require attention not to use the CPU which is not programmed.

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Section 3
Electrical Alignment

3-1. Preparation

3-1-1. Equipment Required

Measuring Equipment

- Oscilloscope (Band width 300 MHz or more)
  Tektronix 2465B or equivalent
- HD digital signal generator
  Shibasoku TG15C6 or equivalent
  (Transmission matrix conforming to ITU-R BT.709)
- HDTV digital waveform monitor
  Tektronix WFM1125-0A or equivalent
  (Transmission matrix conforming to ITU-R BT.709)
- HD analog monitor
  Sony PHM-14M8U or equivalent

Peripheral Equipment

- HD D/A converter board
  Sony HKPF-102
  Transmission matrix conforming to ITU-R BT.709
  (Models after serial No. 12001 or ITU-R BT.709 modified units)
- Sony digital video interface unit
  Either of Sony PFV-HD300 or HD50A

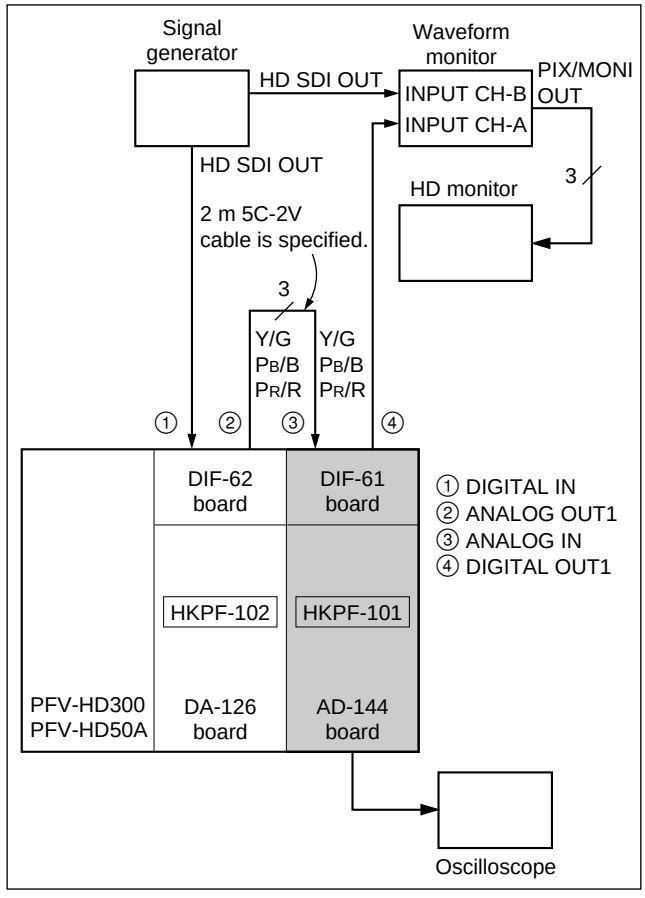
Fixture

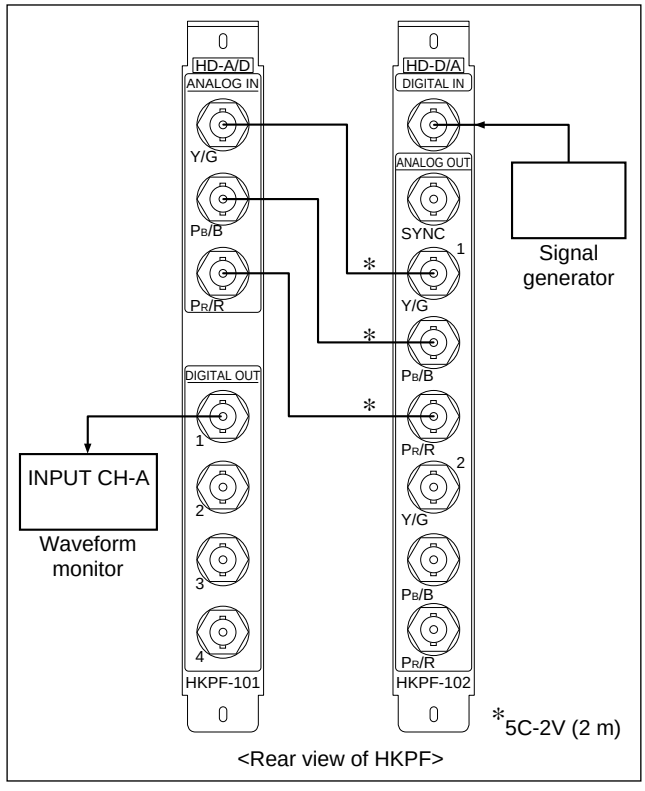
- Extension board EX-331 (Sony P/N : J-6185-960-A)

3-1-2. Notes on Adjustment

- All measuring equipment and HKPF-102 shall be completely calibrated.
- Connect each equipment properly referring to Section 3-1-3.
- As for initial settings before beginning adjustment, refer to Section 3-1-4.
- Before the adjustment, be sure to warm the unit up for about ten minutes.
- Turn off the power to the digital video interface unit before extending the AD-144 board.
- ◓RV10, ◓RV11 and ◓RV12 on the AD-144 board can vary the output level (Y, P_B, P_R each) at the DIGITAL OUT connectors in the range of ±5 % only when the switch S9 is set to “VARI”. Refer to Section 1-1 for details.
- ◓RV78 on the AD-144 board is only for factory-use. Do not touch it in the field.

3-1-3. Connection





3-1-4. Initial Setting

1. Switch settings
   When changing the following switches from a customer-set position, it is recommended to record the setting states in the table below.
   After adjustment is complete, be sure to return the switches to their customer-set positions.

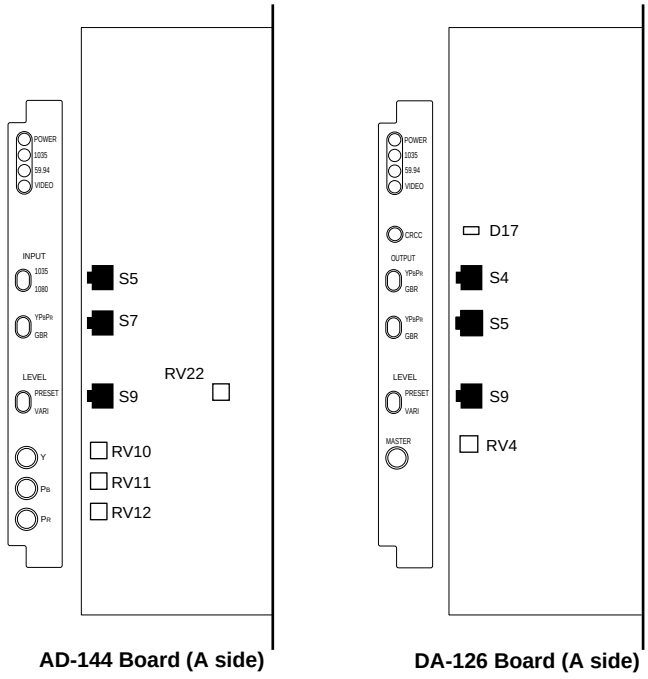
Board	Switch	Setting during adjustment	Customer-set position
AD-144	S5 (board panel)	1080	
	S7 (board panel)	YP_BP_R	
	S9 (board panel)	PRESET	
DA-126	S4 (board panel)	YP_BP_R	
(HKPF-102)	S5 (board panel)	YP_BP_R	
	S9 (board panel)	PRESET	

2. Board extension
   All adjustments described in this section require extending the AD-144 board.

3. Setting of oscilloscope
   20 MHz LIMIT → OFF
   INPUT COUPLING → 1 MΩ DC

4. Setting of digital waveform monitor
   YP_BP_R, SWEEP → 1H
   RGB transcoder → SMPTE 274M
   Connect the digital waveform monitor to the DIGITAL OUT 1 connector of the HKPF-101.

5. Setting of signal generator
   Number of active lines → 1080



AD-144 Board (A side) **DA-126 Board (A side)**

3-2. Y/PB/PR Input Level Adjustment

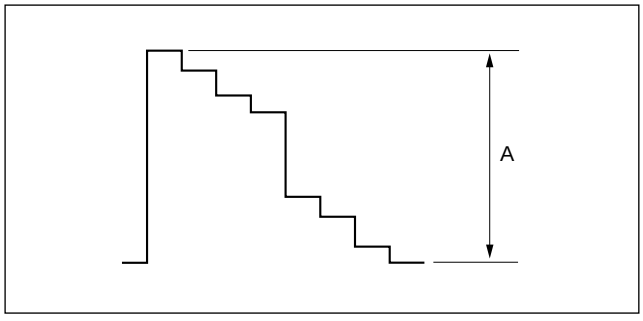
Equipment : Oscilloscope

Preparations

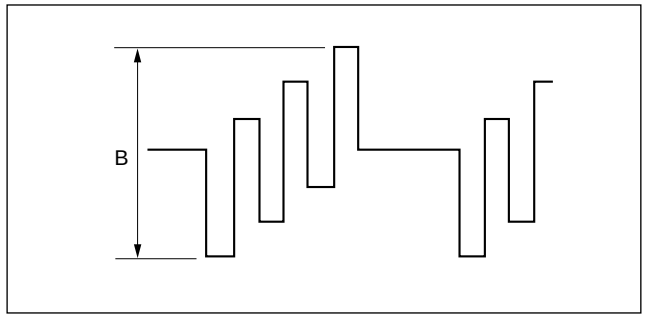
- Setting of signal generator → 4:3 Color-Bar
- Setting of digital waveform monitor → PARADE

Adjustment Procedures

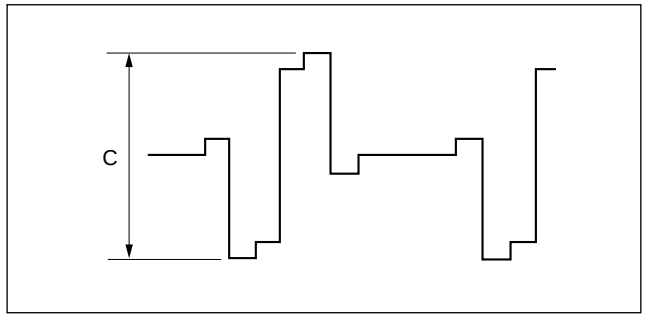
1. Y level adjustment
   Test point : TP7/AD-144
   GND : E3/AD-144
   Adjustment point : ⊘RV1/AD-144
   Specification : A = 1.000 ±0.005 V

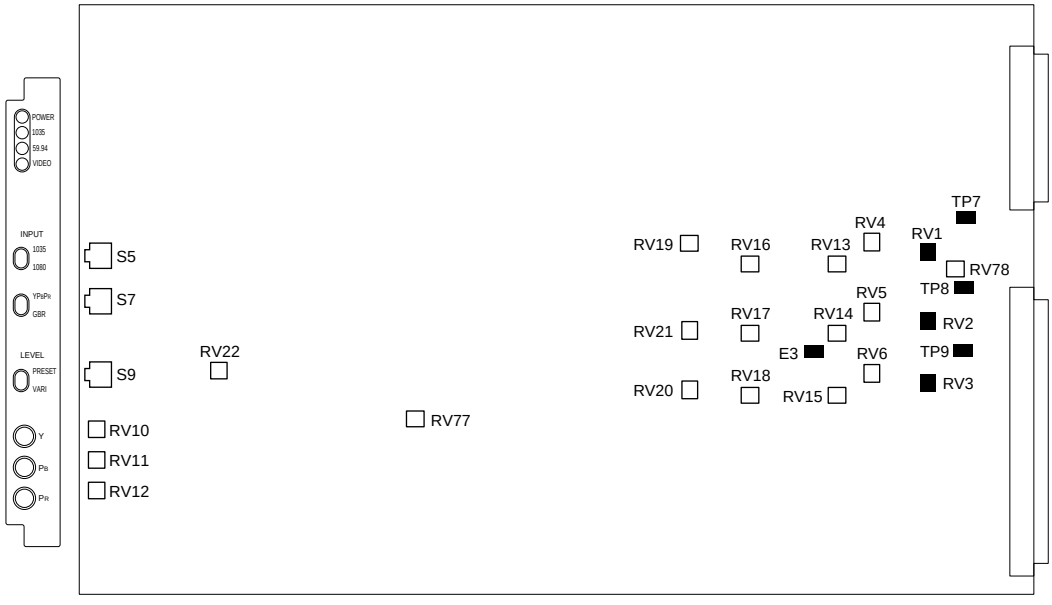


2. PB level adjustment
   Test point : TP8/AD-144
   GND : E3/AD-144
   Adjustment point : ⊘RV2/AD-144
   Specification : B = 1.000 ±0.005 V



3. PR level adjustment
   Test point : TP9/AD-144
   GND : E3/AD-144
   Adjustment point : ⊘RV3/AD-144
   Specification : C = 1.000 ±0.005 V





AD-144 Board (A side)

3-3. A/D Y Level Adjustment

Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

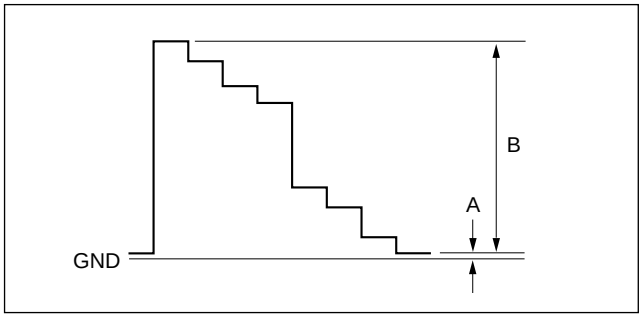
Preparations

- Setting of signal generator → 4:3 Color-Bar
- Setting of digital waveform monitor → OVERLAY

Adjustment Procedures

1. Y DC level adjustment
   Adjustment point : ⊘RV19/AD-144
   Specification : A = 0 ± 1 mV dc

2. Y level adjustment
   Adjustment point : ⊘RV16/AD-144
   Specification : B = 700 ± 3 mV p-p



3-4. A/D P_B Level Adjustment

Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

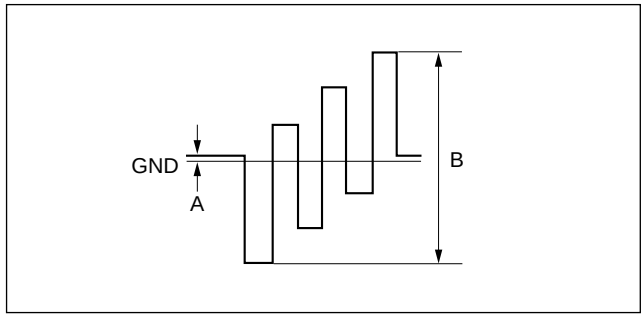
Preparations

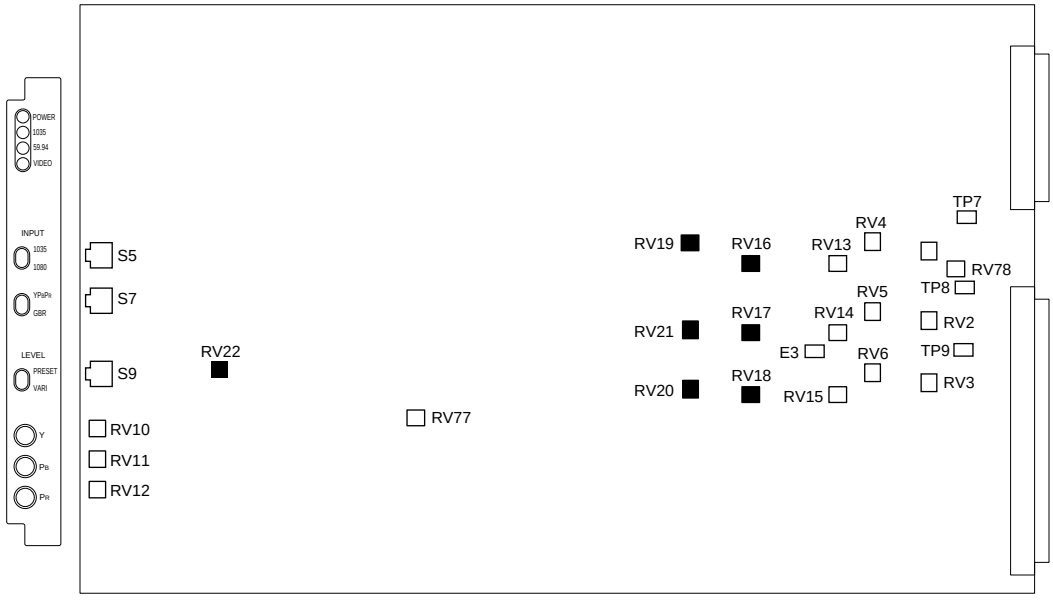
- Setting of signal generator → 4:3 Color-Bar
- Setting of digital waveform monitor → OVERLAY

Adjustment Procedures

1. P_B DC level adjustment
   Adjustment point : ⊘RV21/AD-144
   Specification : A = 0 ± 1 mV dc

2. P_B level adjustment
   Adjustment point : ⊘RV17/AD-144
   Specification : B = 700 ± 3 mV p-p





AD-144 Board (A side)

3-5. A/D P_R Level Adjustment

Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

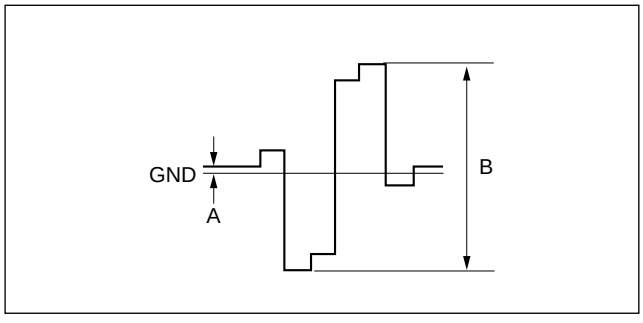
Preparations

- Setting of signal generator → 4:3 Color-Bar
- Setting of digital waveform monitor → OVERLAY

Adjustment Procedures

1. P_R DC level adjustment
   Adjustment point : ⊘RV20/AD-144
   Specification : A = 0 ±1 mV dc

2. P_R level adjustment
   Adjustment point : ⊘RV18/AD-144
   Specification : B = 700 ±3 mV p-p



3-6. Analog-Digital Blanking Phase Adjustment

Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

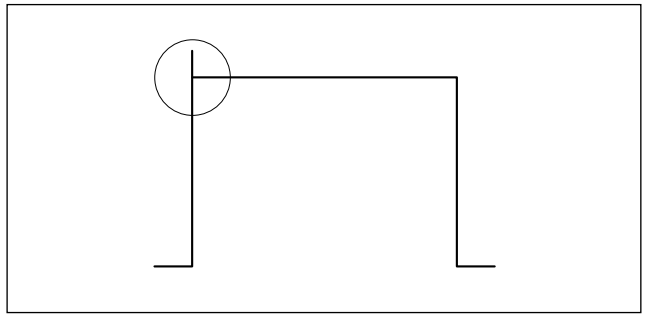
Preparations

- Setting of signal generator → Select Variable White and set the level to 100 %.
- Setting of digital waveform monitor → PARADE

Adjustment Procedure

Adjustment point : ⊘RV22/AD-144
Specifications : No ringing shall occur.

NG



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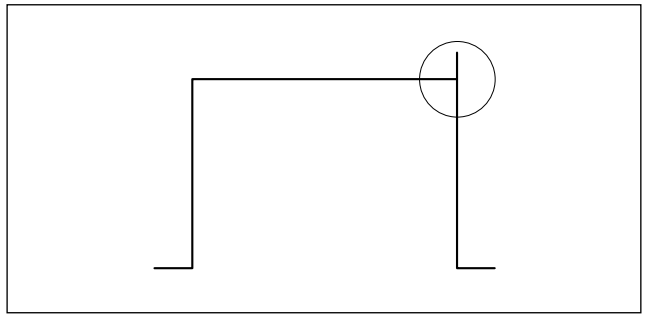
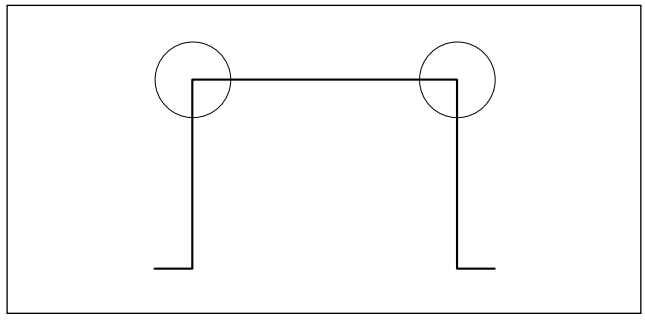


OK (No ringing shall occur.)



3-7. AD-Y Clock Phase Adjustment

Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

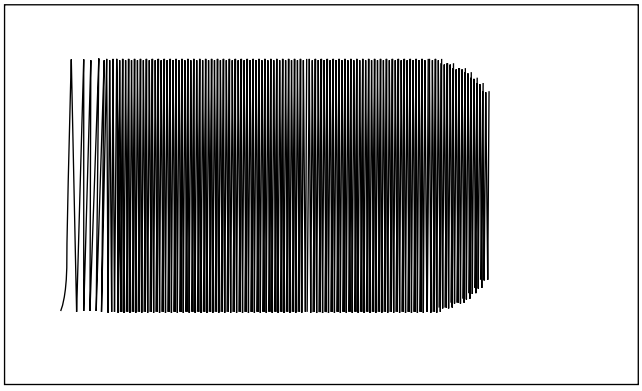
Preparations

- Setting of signal generator → Multiburst2
- Setting of digital waveform monitor → OVERLAY

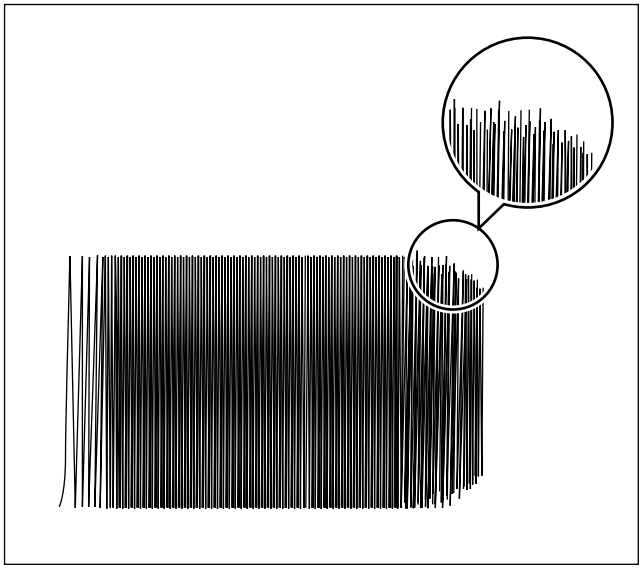
Adjustment Procedures

Adjustment point : ⊘RV77/AD-144
Specification:

OK



NG



3-8. Y Matrix Adjustment Preparations

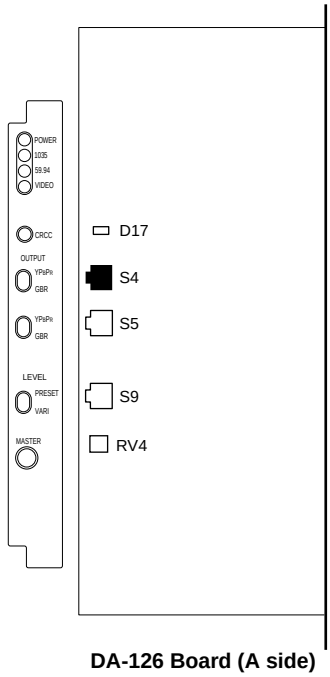
Equipment : Digital waveform monitor
Test point : SDI OUT connector of signal generator

Preparations

- Setting of signal generator → 100 % Color-Bar
- Setting of digital waveform monitor
  - Input → INPUT B
  - DISPLAY setting → OVERLAY
- S7/AD-144 (HKPF-101) → GBR
- S4/DA-126 (HKPF-102) → GBR

Adjustment Procedures

Select only CH1 of the digital waveform monitor, and display only the Y signal of color bars.
Set SAVE&DISP on the digital waveform monitor to ON. This records and saves the waveform information on the CRT.



DA-126 Board (A side)

3-9. Y Matrix Adjustment

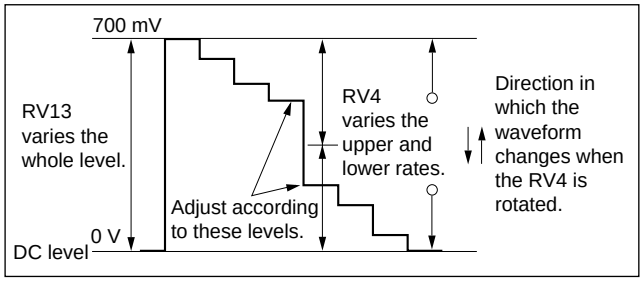
Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

Preparations

- Setting of signal generator → 100% Color-Bar
- Setting of digital waveform monitor
  - Input → INPUT A
  - DISPLAY setting → OVERLAY
- S7/AD-144 (HKPF-101) → GBR
- S4/DA-126 (HKPF-102) → GBR

Adjusting Procedures

Adjustment points : ⊘RV4, ⊘RV13/AD-144
Specifications : The waveform and level should meet those recorded and saved in "3-8. Y Matrix Adjustment Preparations".



Select INPUT A of the digital waveform monitor and coincide the DC level recorded and saved in "3-8. Y Matrix Adjustment Preparations" to those specified. Adjust ⊘RV4 and ⊘RV13 alternately to adjust the level.

3-10. P_B Matrix Adjustment

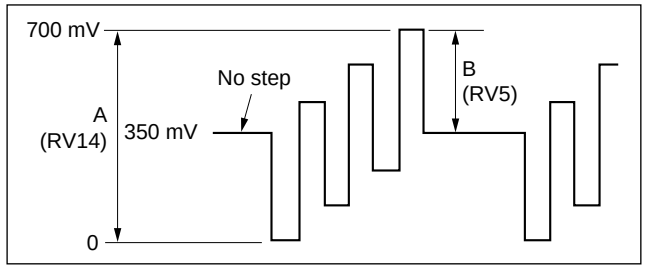
Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

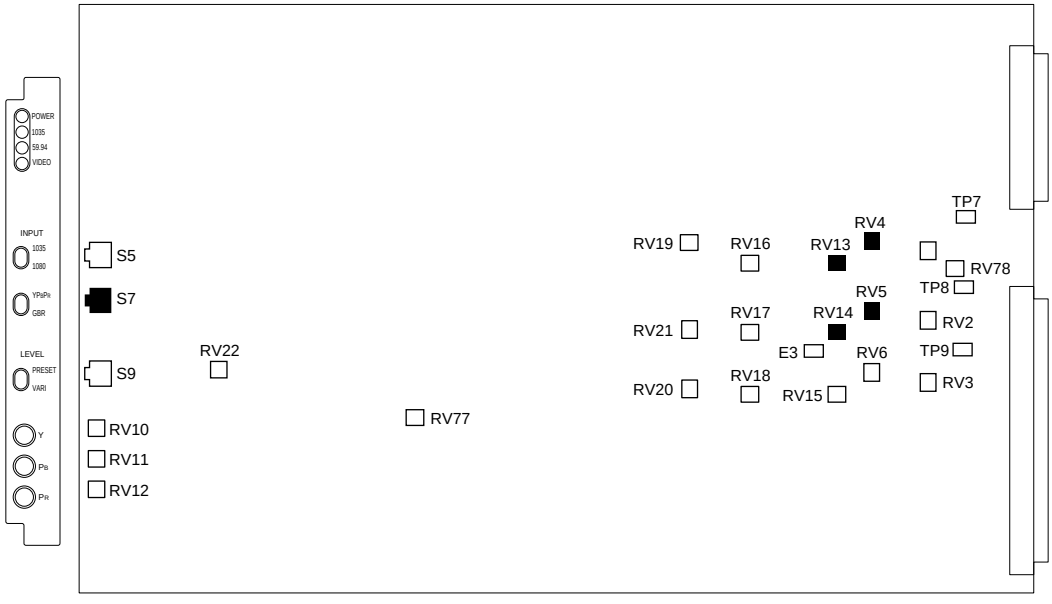
Preparations

- Setting of signal generator → 100 % Color-Bar
- Setting of digital waveform monitor
  - Input → INPUT A
  - DISPLAY setting → OVERLAY
  - SAVE&DISP → OFF
- S7/AD-144 (HKPF-101) → GBR
- S4/DA-126 (HKPF-102) → GBR

Adjustment Procedure

Select CH2 of the digital waveform monitor and display only the P_B color bar signal.
Adjustment points : ⊘RV14, ⊘RV5/AD-144
Specifications : Adjust ⊘RV14 and ⊘RV5 alternately until the specfications A and B are satisfied.
A = 700 ± 4 mV
B = 350 ± 2 mV





AD-144 Board (A side)

3-11. P_R Matrix Adjustment

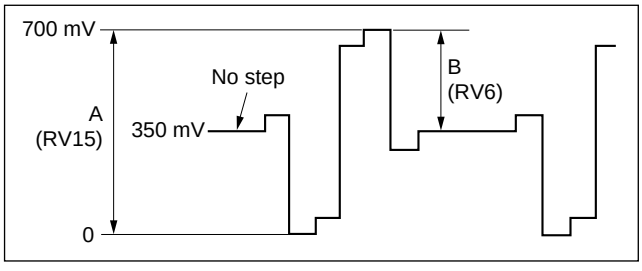
Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

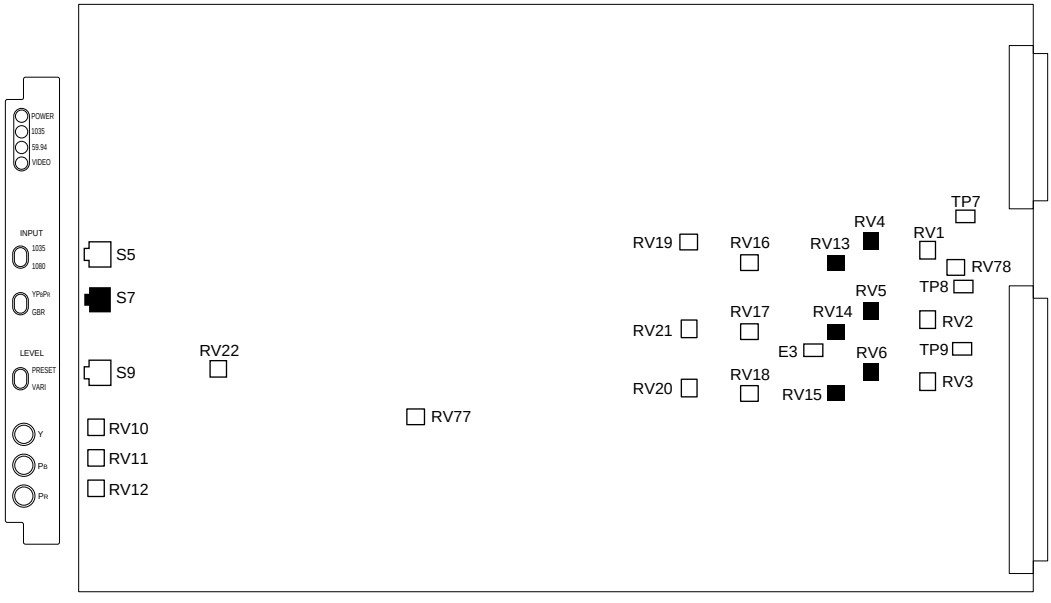
Preparations

- Setting of signal generator → 100 % Color-Bar
- Setting of digital waveform monitor
  - Input → INPUT A
  - DISPLAY setting → OVERLAY
  - SAVE&DISP → OFF
- S7/AD-144 (HKPF-101) → GBR
- S4/DA-126 (HKPF-102) → GBR

Adjustment Procedure

Select CH3 of the digital waveform monitor and display only the P_R color bar signal.
Adjustment points : ⊘RV15, ⊘RV6/AD-144
Specifications : Adjust ⊘RV15 and ⊘RV6 alternately until the specifications A and B are satisfied.
A = 700 ±4 mV
B = 350 ±2 mV





AD-144 Board (A side)

3-12. Matrix Adjustment Confirmation

Equipment : Digital waveform monitor
Test point : DIGITAL OUT connector

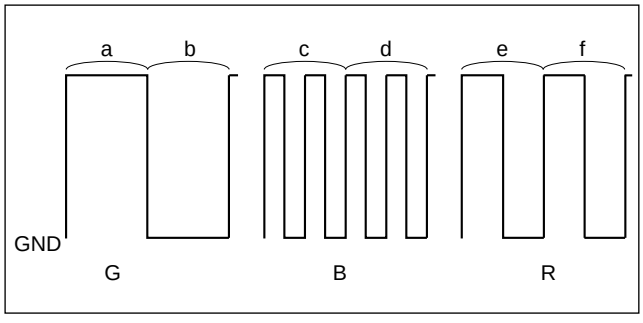
Preparations

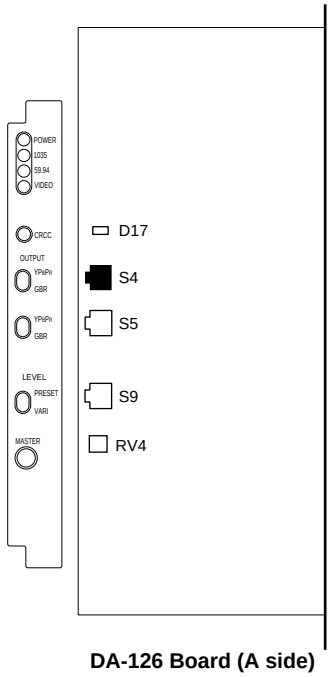
- Setting of signal generator → 100 % Color-Bar
- Setting of digital waveform monitor
  WAVEFORM Menu
  TRANSCODE Item → ON, GBR display
  Input → INPUT A
  DISPLAY setting → PARADE
  (Simultaneous display of CH1, CH2, and CH3)
- S7/AD-144 (HKPF-101) → GBR
- S4/DA-126 (HKPF-102) → GBR

Confirmation Procedure

Confirm that the levels from “a” to “f” are flat.
If out of specifications, make a fine adjustment with the following controls.

To adjust GBR as a whole : ⊘RV4, ⊘RV13/AD-144
To adjust B : ⊘RV5/AD-144
To adjust levels “c” and “d” : ⊘RV14/AD-144
To adjust R : ⊘RV6/AD-144
To adjust levels “e” and “f” : ⊘RV15/AD-144



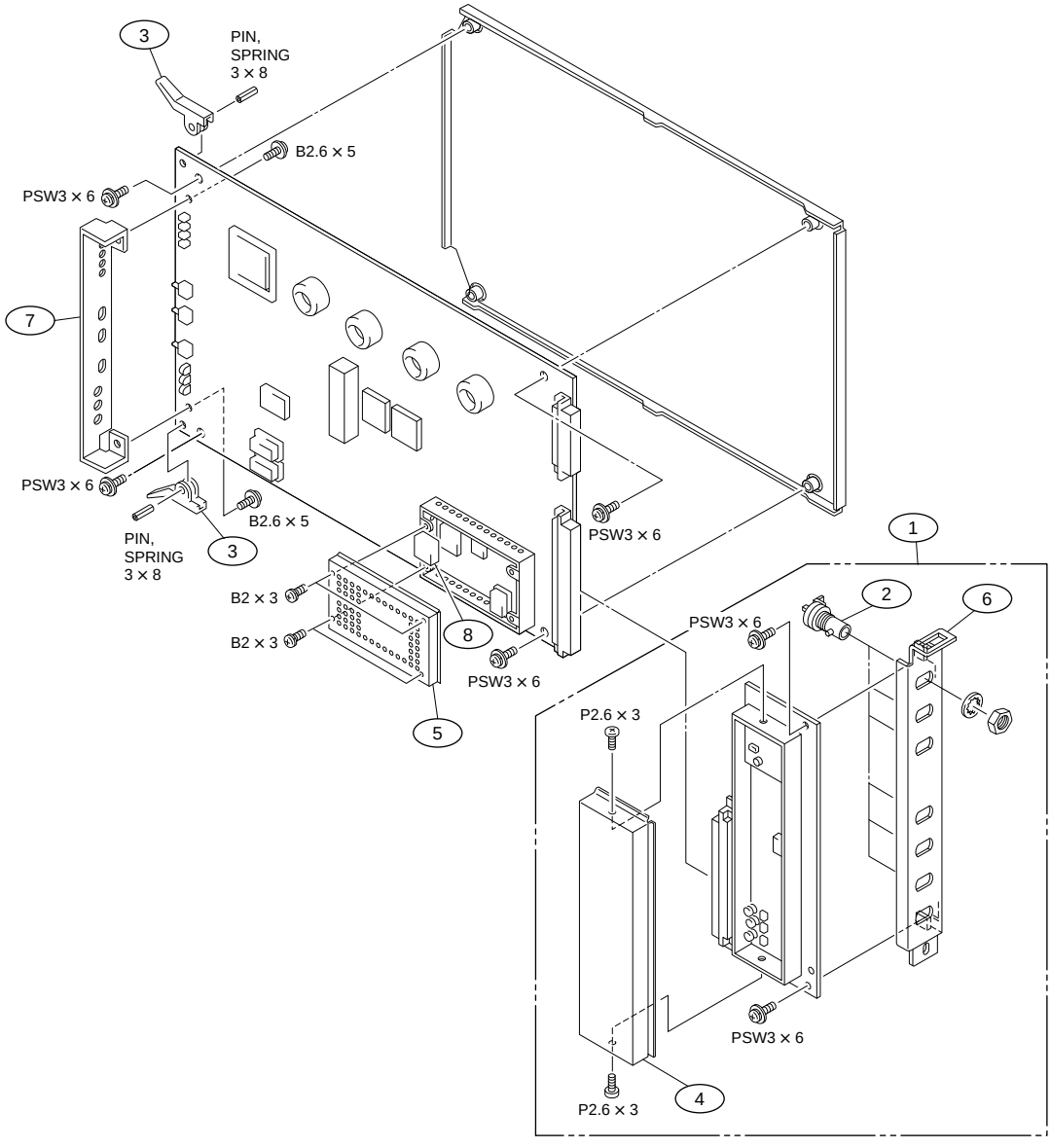


DA-126 Board (A side)

http://getMANUAL.com

Section 4
Spare Parts

4-1. Exploded View



No.	Part No.	SP	Description
1	A-8313-791-A	o	MOUNTED CIRCUIT BOARD, DIF-61
2	1-764-273-11	s	CONNECTOR, BNC "ANALOG IN""DIGITAL OUT"
3	2-182-909-01	o	LEVER, PC BOARD
4	3-608-261-01	o	COVER, SHIELD CASE(1)
5	3-608-265-01	o	COVER, SHIELD CASE(B)
6	3-608-268-01	o	PANEL(101), CONNECTOR
7	3-608-269-02	o	PANEL, FRONT(101)
8	3-694-127-01	o	SHEET(L), VENTILATION
	7-621-259-18	s	SCREW +P 2.6X3
	7-621-770-87	s	SCREW +B 2.6X5
	7-621-772-08	s	SCREW +B 2X3
	7-626-320-11	s	PIN, SPRING 3X8
	7-682-947-01	s	SCREW +PSW 3X6

4-2. Electrical Parts List

AD-144 BOARD

Ref. No. or Q'ty	Part No.	SP	Description
2pcs	1-533-223-11	s	CLIP,FUSE
2pcs	2-182-909-01	o	LEVER,PC BOARD
1pc	3-608-265-01	o	COVER,SHIELD CASE(B)
1pc	3-608-269-02	o	PANEL,FRONT(101)
6pcs	3-621-124-00	o	LINING
1pc	3-694-127-01	o	SHEET(L),VENTILATION
2pcs	7-621-770-87	s	SCREW +B2.6X5(EP-FE/CU,NI,CR)
4pcs	7-621-772-08	s	SCREW +B2X3(EP-FE/CU,NI,CR)
2pcs	7-626-320-11	s	SPRING PIN,3X8 (STEEL)
4pcs	7-682-947-01	s	SCREW +PSW 3X6(EP-FE/ZN/CM2)
C1	1-128-397-21	s	CAPACITOR, ELECT 100MF
C2	1-128-397-21	s	CAPACITOR, ELECT 100MF
C3	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C4	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C5	1-128-397-21	s	CAPACITOR, ELECT 100MF
C6	1-128-397-21	s	CAPACITOR, ELECT 100MF
C7	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C8	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C9	1-126-390-11	s	CAPACITOR, ELECT 22MF/6.3V
C10	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C11	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C12	1-128-397-21	s	CAPACITOR, ELECT 100MF
C13	1-128-397-21	s	CAPACITOR, ELECT 100MF
C14	1-135-076-21	s	CAPACITOR,TANTALUM 1.0MF/35V
C15	1-163-009-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C16	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C17	1-135-145-11	s	CAPACITOR TANTALUM 0.47MF/35V
C18	1-163-037-11	s	CAPACITOR,CHIP CERAMIC 0.022MF
C19	1-163-037-11	s	CAPACITOR,CHIP CERAMIC 0.022MF
C20	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C21	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C22	1-135-156-21	s	CAPACITOR,CHIP TANTALUM 6.8MF
C23	1-135-156-21	s	CAPACITOR,CHIP TANTALUM 6.8MF
C24	1-163-009-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C25	1-135-156-21	s	CAPACITOR,CHIP TANTALUM 6.8MF
C26	1-104-910-11	s	CAPACITOR TANTALUM 15MF/10V
C27	1-163-021-91	s	CAPASITOR, CERAMIC 0.01MF/50V
C28	1-128-397-21	s	CAPACITOR, ELECT 100MF
C29	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C30	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C31	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C32	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C33	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C34	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C35	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C36	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C37	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C38	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C39	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C40	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C42	1-163-009-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C43	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C45	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C46	1-164-695-11	s	CAPACITOR,CERAMIC 2200PF/50V
C47	1-104-910-11	s	CAPACITOR TANTALUM 15MF/10V
C49	1-135-156-21	s	CAPACITOR,CHIP TANTALUM 6.8MF
C51	1-135-145-11	s	CAPACITOR TANTALUM 0.47MF/35V
C57	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C59	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V

(AD-144 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C61	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C63	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C65	1-107-877-11	s	CAPACITOR, ELECT 1000MF/10V
C67	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C69	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C70	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C71	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C72	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C73	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C74	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C75	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C76	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C77	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C78	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C79	1-163-235-11	s	CAPACITOR,CHIP CERAMIC 22PF(M-
C80	1-163-235-11	s	CAPACITOR,CHIP CERAMIC 22PF(M-
C81	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C82	1-104-914-11	s	CAPACITOR CHIP TANTAL 22MF/16V
C83	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C84	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C85	1-163-220-11	s	CAPACITOR, CHIP CERAMIC 3.0PF
C86	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C87	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C88	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C89	1-163-217-11	s	CAPACITOR, CHIP CERAMIC 1.0PF
C90	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C91	1-163-220-11	s	CAPACITOR, CHIP CERAMIC 3.0PF
C93	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C94	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C95	1-163-220-11	s	CAPACITOR, CHIP CERAMIC 3.0PF
C96	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C97	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C98	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C99	1-163-217-11	s	CAPACITOR, CHIP CERAMIC 1.0PF
C100	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C101	1-163-220-11	s	CAPACITOR, CHIP CERAMIC 3.0PF
C102	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C103	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C105	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C106	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C107	1-163-220-11	s	CAPACITOR. CHIP CERAMIC 3.0PF
C108	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C109	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C110	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C111	1-163-217-11	s	CAPACITOR, CHIP CERAMIC 1.0PF
C112	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C113	1-163-220-11	s	CAPACITOR, CHIP CERAMIC 3.0PF
C115	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C116	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C117	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C121	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C122	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C123	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C124	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C125	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C126	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C127	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C128	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C129	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V

(AD-144 BOARD)

Ref. No. or Q'ty	Part No.	SP	Description
C130	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C131	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C132	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C133	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C134	1-135-180-21	s	CAPACITOR TANTALUM 3.3MF/10V
C135	1-135-180-21	s	CAPACITOR TANTALUM 3.3MF/10V
C136	1-135-180-21	s	CAPACITOR TANTALUM 3.3MF/10V
C137	1-135-180-21	s	CAPACITOR TANTALUM 3.3MF/10V
C138	1-135-180-21	s	CAPACITOR TANTALUM 3.3MF/10V
C139	1-135-180-21	s	CAPACITOR TANTALUM 3.3MF/10V
C140	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C141	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C142	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C144	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C147	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C148	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C149	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C150	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C151	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C152	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C153	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C154	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C155	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C156	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C157	1-113-682-11	s	CAPACITOR,TANTALUM 33MF/10V
C158	1-113-682-11	s	CAPACITOR,TANTALUM 33MF/10V
C159	1-113-682-11	s	CAPACITOR,TANTALUM 33MF/10V
C160	1-113-682-11	s	CAPACITOR,TANTALUM 33MF/10V
C161	1-113-682-11	s	CAPACITOR,TANTALUM 33MF/10V
C162	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C164	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C166	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C168	1-113-682-11	s	CAPACITOR,TANTALUM 33MF/10V
C169	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C170	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C171	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C172	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C173	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C174	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C175	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C176	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C177	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C178	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C179	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C180	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C181	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C182	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C183	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C184	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C185	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C186	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C187	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C188	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C189	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C190	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C191	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C192	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C193	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C194	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V

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Ref. No. or Q'ty	Part No.	SP	Description
C195	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C196	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C197	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C198	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C199	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C200	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C201	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C202	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C203	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C204	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C205	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C206	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C207	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C208	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C209	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C210	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C211	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C212	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C213	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C214	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C215	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C216	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C217	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C218	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C219	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C220	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C221	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C222	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C223	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C224	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C225	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C226	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C227	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C228	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C229	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C230	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C231	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C232	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C233	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C234	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C235	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C236	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C237	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C238	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C239	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C240	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C241	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C242	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C243	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C244	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C245	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C246	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C247	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C248	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C312	1-163-113-00	s	CAPACITOR,CHIP CERAMIC 68PF/50
C313	1-163-113-00	s	CAPACITOR,CHIP CERAMIC 68PF/50
C314	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C315	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C316	1-104-914-11	s	CAPACITOR CHIP TANTAL 22MF/16V

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Ref. No. or Q'ty	Part No.	SP	Description
C317	1-163-113-00	s	CAPACITOR,CHIP CERAMIC 68PF/50
C318	1-163-113-00	s	CAPACITOR,CHIP CERAMIC 68PF/50
C319	1-163-113-00	s	CAPACITOR,CHIP CERAMIC 68PF/50
C321	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C322	1-163-251-11	s	CAPACITOR CERAMIC 100PF/50V
C323	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C324	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C325	1-104-914-11	s	CAPACITOR CHIP TANTAL 22MF/16V
C326	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C327	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C328	1-113-642-11	s	CAPCITOR TANTALUM 47MF/10V
C329	1-113-642-11	s	CAPCITOR TANTALUM 47MF/10V
C330	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C331	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C332	1-163-245-11	s	CAPACITOR CERAMIC 56PF/50V
C333	1-135-156-21	s	CAPACITOR,CHIP TANTALUM 6.8MF
C334	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C335	1-163-255-91	s	CAPACITOR,CHIP CERAMIC 150PF
C336	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C337	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C338	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C339	1-163-021-91	s	CAPASITOR, CERAMIC 0.01MF/50V
C340	1-104-914-11	s	CAPACITOR CHIP TANTAL 22MF/16V
C341	1-113-642-11	s	CAPCITOR TANTALUM 47MF/10V
C342	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C343	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C344	1-113-642-11	s	CAPCITOR TANTALUM 47MF/10V
C345	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C346	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C347	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C348	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C349	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C350	1-130-483-00	s	CAPCITOR FILM 0.01MF/50V
C351	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C352	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C353	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C354	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C355	1-163-235-11	s	CAPACITOR,CHIP CERAMIC 22PF(M-
C356	1-163-235-11	s	CAPACITOR,CHIP CERAMIC 22PF(M-
C357	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C358	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C359	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C360	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C361	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C362	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C363	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C364	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C365	1-163-009-11	s	CAPACITOR,CHIP CERAMIC 1000PF
C366	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C367	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C368	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C369	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C370	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C371	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C374	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C375	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C376	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C377	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C378	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V

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Ref. No. or Q'ty	Part No.	SP	Description
C379	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C380	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C381	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C382	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C383	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C384	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C385	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C386	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C387	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C388	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C389	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C391	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C392	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C393	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C401	1-163-227-11	s	CAPACITOR CERAMIC 10PF/50V(CH)
C402	1-163-231-11	s	CAPACITOR,CHIP CERAMIC15PF/50V
C404	1-107-688-11	s	CAPACITOR TANTALUM 1.5MF/25V
C405	1-107-688-11	s	CAPACITOR TANTALUM 1.5MF/25V
C406	1-107-688-11	s	CAPACITOR TANTALUM 1.5MF/25V
C408	1-163-227-11	s	CAPACITOR CERAMIC 10PF/50V(CH)
C409	1-104-851-11	s	CAPACITOR,TANTALUM 10MF/10V
C410	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C411	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C412	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C413	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C414	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C415	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C416	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C417	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C418	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C419	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C420	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C421	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C422	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C423	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C424	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C425	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C426	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C427	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C428	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C429	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C430	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C431	1-163-227-11	s	CAPACITOR CERAMIC 10PF/50V(CH)
C450	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C720	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C722	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
C723	1-163-038-91	s	CAPACITOR, CERAMIC 0.1MF/25V
CN1	1-569-465-11	o	PIN, DIN CONNECTOR (DIP) 48P
D1	8-719-987-43	s	LED CL-150PG-CD
D2	8-719-987-43	s	LED CL-150PG-CD
D3	8-719-987-43	s	LED CL-150PG-CD
D4	8-719-157-23	s	DIODE RD4.7M-B
D5	8-719-801-78	s	DIODE 1SS184
D6	8-719-801-78	s	DIODE 1SS184
D7	8-719-801-78	s	DIODE 1SS184
D8	8-759-274-66	s	IC LM4040BIM3-5.0
D9	8-759-185-42	s	IC LM4040AIM3-2.5
D10	8-719-800-76	s	DIODE 1SS226

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Ref. No. or Q'ty	Part No.	SP	Description	
D11	8-719-800-76	s	DIODE 1SS226	
D12	8-719-981-38	s	DIODE ERC62M-004	(RECTI)
D13	8-719-981-38	s	DIODE ERC62M-004	(RECTI)
D16	8-719-981-38	s	DIODE ERC62M-004	(RECTI)
D17	8-719-801-78	s	DIODE 1SS184	
D18	8-719-974-41	s	LED HLMP-6500-010	
D19	8-719-974-41	s	LED HLMP-6500-010	
D20	8-719-974-41	s	LED HLMP-6500-010	
D21	8-719-974-41	s	LED HLMP-6500-010	
D22	8-719-059-59	s	DIODE MA3J74200LSO	
D25	8-719-800-76	s	DIODE 1SS226	
D26	8-719-800-76	s	DIODE 1SS226	
D27	8-719-800-76	s	DIODE 1SS226	
D28	8-719-104-34	s	DIODE 1S2836	
F1	⚠ 1-533-817-21	s	THEMISTOR, POSITIVE	
F2	⚠ 1-576-228-11	s	FUSE (H.B.C)	
F3	⚠ 1-533-817-21	s	THEMISTOR, POSITIVE	
FL1	1-234-174-11	s	L.P.F.(30M)	
FL2	1-234-173-11	s	L.P.F.(15M)	
FL3	1-234-173-11	s	L.P.F.(15M)	
IC1	8-759-906-53	s	IC TL062CPS	
IC2	8-759-937-36	s	IC TL1451ACNS	
IC3	8-759-937-36	s	IC TL1451ACNS	
IC5	8-759-186-44	s	IC TC74VHC125F	
IC6	8-759-181-29	s	IC TC7W04FU-TE12R	
IC7	8-759-234-20	s	IC TC7S08F	
IC8	8-759-154-60	s	IC UPD71055GB-10-3B4	
IC9	8-759-234-20	s	IC TC7S08F	
IC10	8-759-154-60	s	IC UPD71055GB-10-3B4	
IC11	8-759-165-37	s	IC X24164SIC7000	
IC12	8-759-973-71	s	IC TL7705CPS-B	
IC13	8-759-635-27	s	IC M62352GP	
IC14	8-759-496-01	o	IC H8/532-HKPF101/2-V1.05	
IC15	8-759-079-70	s	IC TC74VHC138FS(EL)	
IC16	8-759-035-87	s	IC SC7S00F	
IC17	8-759-497-30	s	IC LC35256DT-10-TLM	
IC18	8-759-079-85	s	IC TC74VHC244FS(EL)	
IC19	8-759-182-95	s	IC HD151015T	
IC20	8-759-054-61	s	IC CLC505AJE	
IC21	8-759-066-57	s	IC TC74HC4066AFS	
IC22	8-759-082-61	s	IC TC4W53FU	
IC23	8-759-327-01	s	IC NJM062V-TE2	
IC24	8-759-054-61	s	IC CLC505AJE	
IC25	8-759-066-57	s	IC TC74HC4066AFS	
IC26	8-759-082-61	s	IC TC4W53FU	
IC27	8-759-327-01	s	IC NJM062V-TE2	
IC28	8-759-054-61	s	IC CLC505AJE	
IC29	8-759-066-57	s	IC TC74HC4066AFS	
IC30	8-759-082-61	s	IC TC4W53FU	
IC31	8-759-054-61	s	IC CLC505AJE	
IC32	8-759-054-61	s	IC CLC505AJE	
IC33	8-759-054-61	s	IC CLC505AJE	
IC34	8-759-066-57	s	IC TC74HC4066AFS	
IC35	8-752-068-24	s	IC CXA1450M-TH	
IC36	8-752-068-24	s	IC CXA1450M-TH	
IC37	8-752-068-24	s	IC CXA1450M-TH	
IC38	8-759-054-61	s	IC CLC505AJE	
IC39	8-759-054-61	s	IC CLC505AJE	

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IC40	8-759-054-61	s	IC CLC505AJE	
IC41	8-759-327-01	s	IC NJM062V-TE2	
IC42	8-759-054-61	s	IC CLC505AJE	
IC43	8-759-054-61	s	IC CLC505AJE	
IC44	8-759-054-61	s	IC CLC505AJE	
IC45	8-759-082-61	s	IC TC4W53FU	
IC46	8-759-082-61	s	IC TC4W53FU	
IC47	8-759-082-61	s	IC TC4W53FU	
IC48	8-759-327-01	s	IC NJM062V-TE2	
IC49	8-759-327-01	s	IC NJM062V-TE2	
IC50	8-759-327-01	s	IC NJM062V-TE2	
IC51	8-759-327-01	s	IC NJM062V-TE2	
IC52	8-759-347-04	s	IC SPT7860SCT	
IC53	8-759-347-04	s	IC SPT7860SCT	
IC54	8-759-347-04	s	IC SPT7860SCT	
IC55	8-759-347-04	s	IC SPT7860SCT	
IC56	8-759-386-26	s	IC 74LCX574MTCX	
IC57	8-759-386-26	s	IC 74LCX574MTCX	
IC58	8-759-386-26	s	IC 74LCX574MTCX	
IC59	8-759-386-26	s	IC 74LCX574MTCX	
IC60	8-759-386-26	s	IC 74LCX574MTCX	
IC61	8-759-386-26	s	IC 74LCX574MTCX	
IC62	8-759-386-26	s	IC 74LCX574MTCX	
IC70	8-759-239-34	s	IC TC74HC4538AF	
IC71	8-759-970-59	s	IC TLC272CPS	
IC72	8-759-054-61	s	IC CLC505AJE	
IC73	8-759-902-88	s	IC SN74LS123NS	
IC74	8-759-239-34	s	IC TC74HC4538AF	
IC75	8-759-970-59	s	IC TLC272CPS	
IC76	8-759-066-59	s	IC TC74HC4053AFS	
IC77	8-759-980-44	s	IC TL712CPS	
IC78	8-759-069-36	s	IC MC74HC4046AF	
IC79	8-759-242-64	s	IC TC4W53F	
IC81	8-759-970-59	s	IC TLC272CPS	
IC83	8-759-925-74	s	IC SN74HC04ANS	
IC84	8-759-186-44	s	IC TC74VHC125F	
IC85	8-759-386-22	s	IC 74LCX04SJX	
IC86	8-759-398-45	s	IC SN74LVC74NS-E05	
IC87	8-759-398-45	s	IC SN74LVC74NS-E05	
IC88	8-759-970-59	s	IC TLC272CPS	
IC90	8-759-491-33	s	IC TC74VHCT08AF (EL)	
IC91	8-759-327-01	s	IC NJM062V-TE2	
IC101	8-759-421-88	s	IC SN74LVC821APW (E05)	
IC102	8-759-421-88	s	IC SN74LVC821APW (E05)	
IC103	8-759-421-88	s	IC SN74LVC821APW (E05)	
IC104	8-759-421-88	s	IC SN74LVC821APW (E05)	
IS14	1-540-252-11	s	SOCKET, IC (PLCC)	
L1	1-414-441-11	s	INDUCTOR (POWER) 15UH	
L2	1-414-441-11	s	INDUCTOR (POWER) 15UH	
L3	1-414-441-11	s	INDUCTOR (POWER) 15UH	
L4	1-414-441-11	s	INDUCTOR (POWER) 15UH	
L5	1-414-529-21	s	INDUCTOR (POWER)	
L6	1-414-529-21	s	INDUCTOR (POWER)	
L7	1-403-684-11	s	COIL, CHOKE	
L8	1-403-684-11	s	COIL, CHOKE	
L9	1-409-914-11	s	COIL, CHOKE 10UH	
L10	1-409-914-11	s	COIL, CHOKE 10UH	

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Ref. No. or Q'ty	Part No.	SP	Description
L12	1-414-441-11	s	INDUCTOR (POWER) 15UH
L14	1-403-684-11	s	COIL, CHOKE
L16	1-409-914-11	s	COIL, CHOKE 10UH
L17	1-412-027-11	s	INDUCTOR,CHIP
L18	1-412-027-11	s	INDUCTOR,CHIP
L19	1-412-027-11	s	INDUCTOR,CHIP
L20	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L21	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L22	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L23	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L24	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L25	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L26	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L27	1-412-390-21	s	MICRO INDUCTOR (CHIP) 21A05
L28	1-412-030-11	s	INDUCTOR,CHIP 22UH
L29	1-412-030-11	s	INDUCTOR,CHIP 22UH
L30	1-412-030-11	s	INDUCTOR,CHIP 22UH
L31	1-412-030-11	s	INDUCTOR,CHIP 22UH
L32	1-412-030-11	s	INDUCTOR,CHIP 22UH
L33	1-412-030-11	s	INDUCTOR,CHIP 22UH
L34	1-412-027-11	s	INDUCTOR,CHIP
L35	1-412-027-11	s	INDUCTOR,CHIP
L36	1-412-028-11	s	CHIP INDUCTOR
L37	1-412-028-11	s	CHIP INDUCTOR
L38	1-412-030-11	s	INDUCTOR,CHIP 22UH
L39	1-412-033-11	s	CHIP INDUCTOR
Q1	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q2	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q3	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q4	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q5	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q6	8-729-035-84	s	TRANSISTOR 2SA1385-Z-E2
Q7	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q8	8-729-105-19	s	TRANSISTOR 2SC3518L
Q9	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q10	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q11	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q12	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q13	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q14	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q15	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q16	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q17	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q18	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q19	8-729-206-05	s	TRANSISTOR 2SA1329-O
Q20	8-729-206-08	s	TRANSISTOR 2SC3346-O
Q23	8-729-216-22	s	TRANSISTOR 2SA1162-G
Q25	8-729-206-05	s	TRANSISTOR 2SA1329-O
Q26	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
Q27	8-729-027-57	s	TRANSISTOR DTC143XKA-T146
Q28	8-729-027-57	s	TRANSISTOR DTC143XKA-T146
Q29	8-729-027-57	s	TRANSISTOR DTC143XKA-T146
Q30	8-729-027-57	s	TRANSISTOR DTC143XKA-T146
Q31	8-729-117-32	s	TRANSISTOR 2SC4177
Q32	8-729-117-32	s	TRANSISTOR 2SC4177
Q33	8-729-117-32	s	TRANSISTOR 2SC4177
Q34	8-729-143-13	s	TRANSISTOR 2SC4176-B34
Q35	8-729-122-63	s	TRANSISTOR 2SA1226-E4

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Ref. No. or Q'ty	Part No.	SP	Description
Q36	8-729-143-07	s	TRANSISTOR 2SA1610-Y33
Q37	8-729-143-13	s	TRANSISTOR 2SC4176-B34
Q38	8-729-143-13	s	TRANSISTOR 2SC4176-B34
Q39	8-729-143-13	s	TRANSISTOR 2SC4176-B34
Q40	8-729-143-07	s	TRANSISTOR 2SA1610-Y33
Q41	8-729-143-07	s	TRANSISTOR 2SA1610-Y33
Q42	8-729-120-28	s	TRANSISTOR 2SC1623-L5L6
R1	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R2	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R3	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R4	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R5	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R6	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R7	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R8	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R9	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R10	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R11	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R12	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R13	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R14	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R15	1-216-673-11	s	RESISTOR,CHIP 8.2K 1/10W(2125)
R16	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R17	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R18	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R19	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R20	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R21	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R22	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R23	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R24	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R25	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R26	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R27	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R28	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R29	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R30	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R31	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R32	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R33	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R34	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R35	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R37	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R38	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R39	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R40	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R41	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R42	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R43	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R44	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R45	1-216-667-11	s	RESISTOR,CHIP 4.7K 1/10W(2125)
R46	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R47	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R48	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R49	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R50	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R51	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R52	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K

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Ref. No. or Q'ty	Part No.	SP	Description
R53	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R54	1-216-695-11	s	RESISTOR,CHIP 68K 1/10W(2125)
R55	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R56	1-218-760-11	s	RESISTOR, METAL FILM CHIP 220K
R57	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R58	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R59	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R60	1-216-695-11	s	RESISTOR,CHIP 68K 1/10W(2125)
R61	1-216-695-11	s	RESISTOR,CHIP 68K 1/10W(2125)
R62	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R63	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R64	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R65	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R66	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R67	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R68	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R69	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R70	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R71	1-216-639-11	s	RESISTOR,CHIP 330 1/10W(2125)
R72	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R73	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R74	1-216-603-11	s	RESISTOR,CHIP 10 1/10W(2125)
R75	1-216-603-11	s	RESISTOR,CHIP 10 1/10W(2125)
R79	1-216-671-11	s	RESISTOR,CHIP 6.8K 1/10W(2125)
R80	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R81	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R83	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R85	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R86	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R87	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R88	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R90	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R91	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R95	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R101	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R102	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R104	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R107	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R108	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R109	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R110	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R111	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R112	1-216-647-11	s	RESISTOR,CHIP 680 1/10W(2125)
R113	1-216-647-11	s	RESISTOR,CHIP 680 1/10W(2125)
R114	1-216-647-11	s	RESISTOR,CHIP 680 1/10W(2125)
R115	1-216-647-11	s	RESISTOR,CHIP 680 1/10W(2125)
R116	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R117	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R118	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R119	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R120	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R121	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R122	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R123	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R124	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R125	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R126	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R127	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R128	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470

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Ref. No. or Q'ty	Part No.	SP	Description
R129	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R130	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R131	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R132	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R133	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R134	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R135	1-216-665-11	s	RESISTOR,CHIP 3.9K 1/10W(2125)
R136	1-216-670-11	s	RESISTOR, METAL FILM CHIP 6.2K
R137	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R138	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R139	1-216-603-11	s	RESISTOR,CHIP 10 1/10W(2125)
R140	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R141	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R142	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R143	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R144	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R145	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R146	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R147	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R148	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R149	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R150	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R151	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R152	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R153	1-216-641-11	s	RESISTOR,CHIP 390 1/10W(2125)
R154	1-216-631-11	s	RESISTOR,CHIP 150 1/10W(2125)
R156	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R157	1-216-624-11	s	RESISTOR,CHIP 75 1/10W(2125)
R158	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R159	1-216-624-11	s	RESISTOR,CHIP 75 1/10W(2125)
R160	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R161	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R162	1-216-695-11	s	RESISTOR, METAL FILM CHIP 68K
R163	1-216-667-11	s	RESISTOR, METAL FILM CHIP 4.7K
R164	1-216-649-11	s	RESISTOR,CHIP 820 1/10W(2125)
R165	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R166	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R168	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R169	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R170	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R171	1-216-631-11	s	RESISTOR,CHIP 150 1/10W(2125)
R172	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R173	1-216-624-11	s	RESISTOR,CHIP 75 1/10W(2125)
R174	1-216-624-11	s	RESISTOR,CHIP 75 1/10W(2125)
R175	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R176	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R177	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R178	1-216-695-11	s	RESISTOR, METAL FILM CHIP 68K
R179	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R180	1-216-649-11	s	RESISTOR,CHIP 820 1/10W(2125)
R181	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R182	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R184	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R185	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R186	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R187	1-216-631-11	s	RESISTOR,CHIP 150 1/10W(2125)
R188	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R189	1-216-624-11	s	RESISTOR,CHIP 75 1/10W(2125)
R190	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)

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Ref. No. or Q'ty	Part No.	SP	Description
R191	1-216-624-11	s	RESISTOR,CHIP 75 1/10W(2125)
R192	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R193	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R194	1-216-695-11	s	RESISTOR, METAL FILM CHIP 68K
R195	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R196	1-216-649-11	s	RESISTOR,CHIP 820 1/10W(2125)
R197	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R198	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R200	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R201	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R202	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R203	1-216-637-11	s	RESISTOR, METAL FILM CHIP 270
R204	1-216-627-11	s	RESISTOR CHIP 100 1/10W(2125)
R205	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R206	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R207	1-216-667-11	s	RESISTOR,CHIP 4.7K 1/10W(2125)
R208	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R209	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R210	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R211	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R212	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R213	1-216-655-11	s	RESISTOR,CHIP 1.5K 1/10W(2125)
R214	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R215	1-216-661-11	s	RESISTOR,CHIP 2.7K 1/10W(2125)
R216	1-216-673-11	s	RESISTOR, METAL FILM CHIP 8.2K
R217	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R218	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R219	1-216-657-11	s	RESISTOR,CHIP 1.8K 1/10W(2125)
R220	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R221	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R222	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R223	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R224	1-216-639-11	s	RESISTOR,CHIP 330 1/10W(2125)
R225	1-216-639-11	s	RESISTOR,CHIP 330 1/10W(2125)
R226	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R227	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R228	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R229	1-216-655-11	s	RESISTOR,CHIP 1.5K 1/10W(2125)
R230	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R231	1-216-655-11	s	RESISTOR,CHIP 1.5K 1/10W(2125)
R232	1-216-653-11	s	RESISTOR, METAL FILM CHIP 1.2K
R233	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R234	1-216-695-11	s	RESISTOR,CHIP 68K 1/10W(2125)
R235	1-216-695-11	s	RESISTOR,CHIP 68K 1/10W(2125)
R236	1-216-695-11	s	RESISTOR,CHIP 68K 1/10W(2125)
R237	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R238	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R239	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R240	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R241	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R242	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R243	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R244	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R245	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R246	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R247	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R248	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R249	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R250	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)

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Ref. No. or Q'ty	Part No.	SP	Description
R251	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R252	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R253	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R254	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R255	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R256	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R257	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R258	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R259	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R260	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R261	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R262	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R263	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R264	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R265	1-216-631-11	s	RESISTOR,CHIP 150 1/10W(2125)
R266	1-216-631-11	s	RESISTOR,CHIP 150 1/10W(2125)
R267	1-216-634-11	s	RESISTOR,CHIP 200 1/10W(2125)
R268	1-216-634-11	s	RESISTOR,CHIP 200 1/10W(2125)
R269	1-216-640-11	s	RESISTOR, METAL FILM CHIP 360
R270	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R271	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R272	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R273	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R274	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R275	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R276	1-216-665-11	s	RESISTOR,CHIP 3.9K 1/10W(2125)
R277	1-216-665-11	s	RESISTOR,CHIP 3.9K 1/10W(2125)
R278	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R279	1-216-655-11	s	RESISTOR,CHIP 1.5K 1/10W(2125)
R280	1-216-655-11	s	RESISTOR,CHIP 1.5K 1/10W(2125)
R281	1-216-655-11	s	RESISTOR,CHIP 1.5K 1/10W(2125)
R282	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R283	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R284	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R285	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R286	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R287	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R288	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R289	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R290	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R291	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R292	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R293	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R294	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R295	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R296	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R297	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R298	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R299	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R300	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R301	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R302	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R303	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R304	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R305	1-216-677-11	s	RESISTOR,CHIP 12K 1/10W(2125)
R306	1-216-639-11	s	RESISTOR,CHIP 330 1/10W(2125)
R307	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R308	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R309	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)

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Ref. No. or Q'ty	Part No.	SP	Description
R310	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R311	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R312	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R313	1-216-643-11	s	RESISTOR, METAL FILM CHIP 470
R314	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R315	1-216-647-11	s	RESISTOR,CHIP 680 1/10W(2125)
R316	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R317	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R318	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R319	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R320	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R321	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R322	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R323	1-216-611-11	s	RESISTOR,CHIP 22 1/10W (2125)
R324	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R325	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R326	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R327	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R328	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R329	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R364	1-216-623-11	s	RESISTOR,CHIP 68 1/10W(2125)
R365	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R366	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R367	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R368	1-216-623-11	s	RESISTOR,CHIP 68 1/10W(2125)
R369	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R370	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R371	1-216-649-11	s	RESISTOR,CHIP 820 1/10W(2125)
R372	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R373	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R374	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R375	1-216-699-11	s	RESISTOR,CHIP 100K 1/10W(2125)
R376	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R377	1-216-623-11	s	RESISTOR,CHIP 68 1/10W(2125)
R378	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R379	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R380	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R381	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R382	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R383	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R384	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R385	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R386	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R387	1-216-635-11	s	RESISTOR CHIP 220 1/10W(2125)
R388	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R389	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R390	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R391	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R392	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R393	1-218-764-11	s	RESISTOR,CHIP 330K 1/10W(2125)
R394	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R395	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R396	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R397	1-216-645-11	s	RESISTOR,CHIP 560 1/10W(2125)
R398	1-216-651-11	s	RESISTOR,CHIP 1K 1/10W(2125)
R399	1-216-657-11	s	RESISTOR,CHIP 1.8K 1/10W(2125)
R400	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R401	1-216-667-11	s	RESISTOR,CHIP 4.7K 1/10W(2125)
R402	1-216-637-11	s	RESISTOR CHIP 270 1/10W (2125)

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Ref. No. or Q'ty	Part No.	SP	Description
R403	1-216-673-11	s	RESISTOR,CHIP 8.2K 1/10W(2125)
R404	1-216-627-11	s	RESISTOR,CHIP 100 1/10W(2125)
R405	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R406	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R407	1-216-663-11	s	RESISTOR,CHIP 3.3K 1/10W(2125)
R408	1-216-669-11	s	RESISTOR, METAL FILM CHIP 5.6K
R409	1-216-623-11	s	RESISTOR,CHIP 68 1/10W(2125)
R410	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R411	1-216-623-11	s	RESISTOR,CHIP 68 1/10W(2125)
R412	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R413	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R414	1-216-681-11	s	RESISTOR, METAL FILM CHIP 18K
R415	1-216-681-11	s	RESISTOR, METAL FILM CHIP 18K
R417	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R421	1-216-649-11	s	RESISTOR,CHIP 820 1/10W(2125)
R422	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R423	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R424	1-216-667-11	s	RESISTOR,CHIP 4.7K 1/10W(2125)
R425	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R426	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R427	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R428	1-216-603-11	s	RESISTOR,CHIP 10 1/10W(2125)
R431	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R432	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R433	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R434	1-216-603-11	s	RESISTOR,CHIP 10 1/10W(2125)
R435	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R436	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R437	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R438	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R440	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R445	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R446	1-216-623-11	s	RESISTOR,CHIP 68 1/10W(2125)
R447	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R448	1-216-687-11	s	RESISTOR,METAL FILM CHIP 33K
R449	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R464	1-216-689-11	s	RESISTOR,CHIP 39K 1/10W(2125)
R465	1-216-693-11	s	RESISTOR, METAL FILM CHIP 56K
R466	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R467	1-216-691-11	s	RESISTOR, METAL FILM CHIP 47K
R473	1-216-649-11	s	RESISTOR, CHIP 820 1/10W(2125)
R476	1-216-679-11	s	RESISTOR, METAL FILM CHIP 15K
R477	1-216-661-11	s	RESISTOR, CHIP 2.7K 1/10W(2125)
R478	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R479	1-216-657-11	s	RESISTOR, CHIP 1.8K 1/10W(2125)
R489	1-216-665-11	s	RESISTOR, CHIP 3.9K 1/10W(2125)
R490	1-216-670-11	s	RESISTOR, METAL FILM CHIP 6.2K
R491	1-216-647-11	s	RESISTOR, CHIP 680 1/10W(2125)
R492	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R493	1-216-627-11	s	RESISTOR CHIP 100 1/10W(2125)
R494	1-216-643-11	s	RESISTOR, CHIP 470 (1/10W)(2125)
R495	1-216-639-11	s	RESISTOR, CHIP 330 1/10W(2125)
R496	1-216-629-11	s	RESISTOR, CHIP 120 1/10W(2125)
R497	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R498	1-216-683-11	s	RESISTOR, METAL FILM CHIP 22K
R499	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R500	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R505	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R507	1-216-685-11	s	RESISTOR, CHIP 27K 1/10W(2125)

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Ref. No. or Q'ty	Part No.	SP	Description
R508	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R509	1-216-699-11	s	RESISTOR, CHIP 100K 1/10W(2125)
R510	1-216-651-11	s	RESISTOR, CHIP 1K 1/10W(2125)
R511	1-216-675-11	s	RESISTOR, METAL FILM CHIP 10K
R515	1-216-645-11	s	RESISTOR, CHIP 560 1/10W(2125)
R516	1-216-645-11	s	RESISTOR, CHIP 560 1/10W(2125)
R517	1-216-645-11	s	RESISTOR, CHIP 560 1/10W(2125)
R518	1-216-651-11	s	RESISTOR, CHIP 1K 1/10W(2125)
R550	1-216-647-11	s	RESISTOR, CHIP 680 1/10W(2125)
R551	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R552	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R605	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R606	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R613	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R614	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R700	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R701	1-216-635-11	s	RESISTOR,CHIP 220 1/10W(2125)
R702	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R703	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R704	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R705	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R706	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R707	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R708	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R709	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R710	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R711	1-216-627-11	s	RESISTOR, CHIP 100 1/10W(2125)
R712	1-216-659-11	s	RESISTOR,CHIP 2.2K 1/10W(2125)
R720	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R721	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R723	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R724	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R726	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R727	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
R729	1-216-651-11	s	RESISTOR, CHIP 1K 1/10W(2125)
RB1	1-239-412-11	s	NETWORK, RESISTOR(CHIP TYPE)
RB2	1-239-412-11	s	NETWORK, RESISTOR(CHIP TYPE)
RB3	1-239-412-11	s	NETWORK, RESISTOR(CHIP TYPE)
RB4	1-239-308-11	s	RESISTOR ARRAY,CHIP 47K
RB5	1-239-308-11	s	RESISTOR ARRAY,CHIP 47K
RB6	1-239-308-11	s	RESISTOR ARRAY,CHIP 47K
RB7	1-239-308-11	s	RESISTOR ARRAY,CHIP 47K
RB8	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB9	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB10	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB11	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB12	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB13	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB14	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB15	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB16	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB17	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB18	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RB19	1-239-621-11	s	NETWORK RESISTOR (CHIP) 22
RS3	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
RS11	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
RS12	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
RS14	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
RS29	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)

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Ref. No. or Q'ty	Part No.	SP	Description
RS33	1-216-295-91	s	RESISTOR, CHIP 0 (1/10W)
RV1	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV2	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV3	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV4	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV5	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV6	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV10	1-228-474-00	s	RESISTOR, ADJ 10K
RV11	1-228-474-00	s	RESISTOR, ADJ 10K
RV12	1-228-474-00	s	RESISTOR, ADJ 10K
RV13	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV14	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV15	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV16	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV17	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV18	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV19	1-237-031-11	s	RESISTOR, ADJ, CERMET 200
RV20	1-237-034-11	s	RESISTOR, ADJ, CERMET 2K
RV21	1-237-034-11	s	RESISTOR, ADJ, CERMET 2K
RV22	1-237-030-11	s	RESISTOR, ADJ, CERMET 100
RV77	1-237-032-11	s	RESISTOR, ADJ, CERMET 500
RV78	1-237-033-11	s	RESISTOR, ADJ, CERMET 1K
S1	1-572-658-21	s	SWITCH, ROTARY
S2	1-572-658-21	s	SWITCH, ROTARY
S3	1-692-271-31	s	SWITCH, SLIDE
S4	1-570-832-11	s	SWITCH,SLIDE (2-2-3)
S5	1-692-530-11	s	SWITCH,TOGGLE
S6	1-570-711-11	s	SWITCH,SLIDE
S7	1-692-530-11	s	SWITCH,TOGGLE
S8	1-572-005-11	s	SWITCH,TACTIL(REFLOW TYPE)
S9	1-692-530-11	s	SWITCH,TOGGLE
TP1	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP2	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP3	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP6	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP7	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP8	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP9	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP10	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP11	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP12	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP14	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP15	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP16	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP18	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP19	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
TP20	1-535-877-22	o	CHIP,CHECKER (TEST POINT)
X1	1-579-594-11	s	VIBRATOR, CRYSTAL
X2	1-767-328-11	s	OSCILLATOR, CRYSTAL
X3	1-767-329-11	s	OSCILLATOR, CRYSTAL

http://getMANUAL.com

```
------------
DIF-61 BOARD
------------
Ref. No.
or Q'ty    Part No.    SP Description

1pc        A-8313-791-A o MOUNTED C. BOARD DIF-61
1pc        3-608-261-01 o COVER,SHIELD CASE(1)
1pc        3-608-268-01 o PANEL(101),CONNECTOR
2pcs       7-621-259-18 s SCREW +P2.6X3(EP-CU/NIBK)
2pcs       7-682-947-01 s SCREW +PSW 3X6(EP-FE/ZN/CM2)

2pcs       7-685-647-79 s SCREW +BVTP3X10(EP-FE/ZNBK/CM2

CN1        1-563-341-11 s CONNECTOR HOUSING
CN2        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)
CN3        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)
CN4        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)
CN5        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)

CN6        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)
CN7        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)
CN8        1-764-273-11 s CONNECTOR, COAXIAL (BNC TYPE)
```

4-3. Supplied Accessory

```
Ref. No.
or Q'ty    Part No.    SP Description

1pc      ⚠ 1-576-228-11 s FUSE (H.B.C)
```

4-4. Tools and Fixtures

```
Part No.     SP Description

J-6185-960-A  o EXTENSION BOARD, EX-331
J-6035-070-A  o EXTRACTION TOOL, IC(CT-2101)
```

Section 5
Semiconductor Pin Assignments

ここに記載されている半導体は，それぞれの機能を等価的に表したものです。　なお，互換性のない型名を併記していることがありますので，部品を交換するときは，Spare Partsの章を参照してください。
等価回路はＩＣメーカーのデータブックに従いました。

Semiconductors of which functions are equivalent are described here. For parts replacement, refer to the section of Spare Parts in this manual. The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

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2SA1329-O	5-2
2SA1385-Z-E2	5-2
2SA1610-Y33	5-2
2SA812-T1-M5M6	5-2
2SC1477-T1L5L6	5-2
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2SC1623-T1-L5L6	5-2
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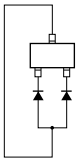
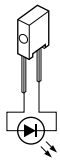
Diode, Transistor

DIODE

-TOP VIEW-

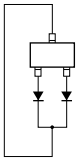


1S2835-T1
1S2836



HLMP-6300-010 ;RED
HLMP-6500-010 ;GREEN

-TOP VIEW-

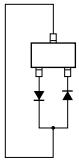


1S2837-T1
1SS184

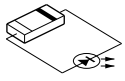
-TOP VIEW-

RD4.7M-B
RD4.7M-T1B

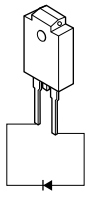
-TOP VIEW-



1SS123-T1
1SS226
DA204U
MA3J74200LSO



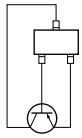
CL-150PG-CD ;GREEN



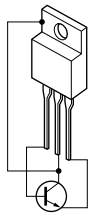
ERC62M-004

TRANSISTOR

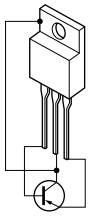
-TOP VIEW-



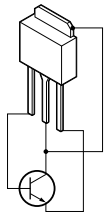
2SA1162G
2SA1226-E4
2SA1610-T1Y34
2SA1610-Y33
2SA812-T1-M5M6



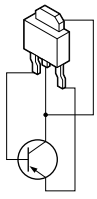
2SC3345-Y
2SC3346-O



2SA1328-Y
2SA1329-O

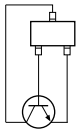


2SC3518-L
2SC3518-ZL-E2



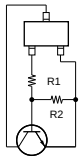
2SA1385-Z-E2

-TOP VIEW-



2SC1623
2SC1623-T1-L5L6
2SC3356-K
2SC3356-T1K
2SC4176-B34
2SC4177-L6
2SC4177-T1L5L6

-TOP VIEW-

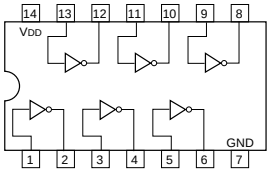


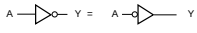
DTC143XKA-T146 (R1 = 4.7 K,R2 = 10 K)

IC

74LCX04SJX (NS)FLAT PACKAGE
SN74HC04ANS (TI)FLAT PACKAGE
TC74VHC04F (TOSHIBA)FLAT PACKAGE
TC74VHCT04F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS HEX INVERTERS
-TOP VIEW-





$Y = \overline{A}$

A	Y
0	1
1	0

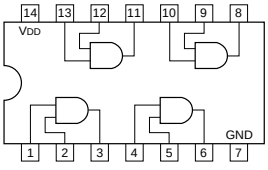
0 ; LOW LEVEL
1 ; HIGH LEVEL

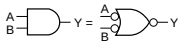
NOTE:

TYPE	VDD
74AC/74VHC/74VHCT	+2 to +5.5V
74ACT/74HCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
OTHER TYPE	+2 to +6V

74LCX08SJX (NS)FLAT PACKAGE
TC74VHC08F(EL) (TOSHIBA)
TC74VHC08FS(EL) (TOSHIBA)FLAT PACKAGE(SMALL)
TC74VHCT08AF(EL) (TOSHIBA)FLAT PACKAGE

C-MOS QUAD 2-INPUT AND GATE
- TOP VIEW -





$Y = A \bullet B = \overline{\overline{A} + \overline{B}}$

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

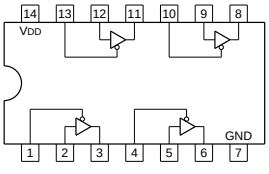
0 ; LOW LEVEL
1 ; HIGH LEVEL

NOTE;

TYPE	VDD
74AC	+2 to +5.5V
40H	+2 to +8V
74ACT/74HCT/74VHCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
OTHER TYPES	+2 to +6V

74LCX125SJX (NS)FLAT PACKAGE
TC74VHC125F (TOSHIBA)FLAT PACKAGE
TC74VHC125F(EL)

C-MOS BUS BUFFER GATES WITH 3-STATE OUTPUT
-TOP VIEW-



G	A	Y
0	0	0
0	1	1
1	X	HI-Z

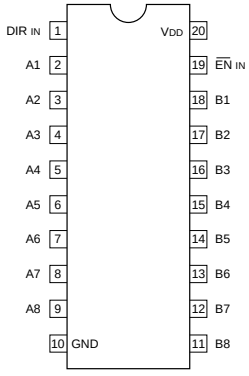
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

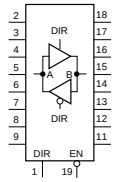
NOTE :

TYPE	VDD
74AC/74VHC	+2 to +5.5V
74ACT/74HCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
74LVT/74LVC	+2.7 to +3.6V
OTHER TYPES	+2 to +6V

74LCX245SJX (NS)FLAT PACKAGE

C-MOS BILATERAL BUS TRANSCEIVERS WITH 3-STATE OUTPUTS
-TOP VIEW-



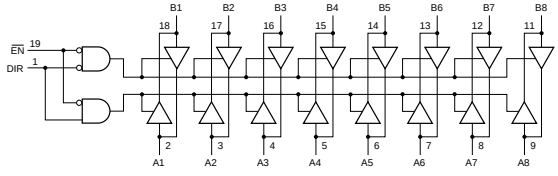


EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

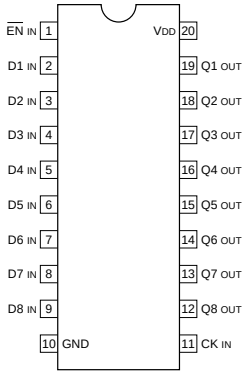
NOTE:

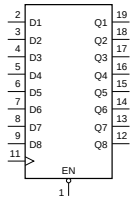
TYPE	VDD
74HC	+2 to +6V
74ABT 74ACT 74BCT 74HCT	+4.5 to +5.5V
74AC 74VHC	+2 to +5.5V
74LCX	+2 to +3.6V
74LVT	+2.7 to +3.6V



74LCX574SJX (NS)FLAT PACKAGE
74VHCT574SJX (NS)FLAT PACKAGE

C-MOS 3-STATE D-TYPE EDGE-TRIGGERED FLIP-FLOP
-TOP VIEW-

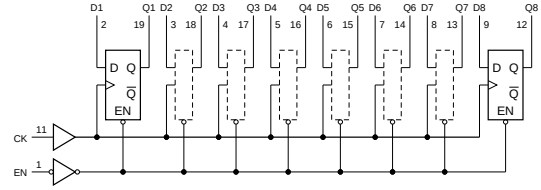




EACH FLIP-FLOP

INPUTS			OUT
EN	CK	D	Q
0	↑	1	1
0	↑	0	0
0	↓	X	Q_0
1	X	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE
Q_0 ; NO CHANGE

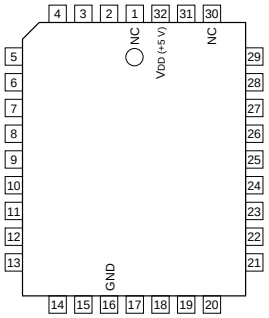


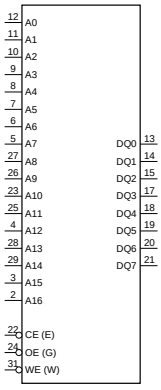
NOTE;

TYPE	VDD
74HC	+2 to +6V
74AC/74VHC	+2 to +5.5V
74ACT/74FCT 74HCT/74VHCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
74LVC	+2.7 to +3.6V

AM29F010-120JC (AMD)

C-MOS 1M (131072x8)-BIT FLASH EEPROM
— TOP VIEW —





(VDD = +5 V)

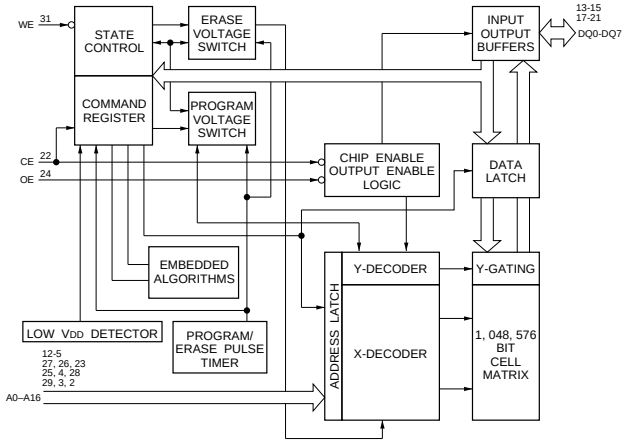
PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	—	NC	17	I/O	DQ3
2	I	A16	18	I/O	DQ4
3	I	A15	19	I/O	DQ5
4	I	A12	20	I/O	DQ6
5	I	A7	21	I/O	DQ7
6	I	A6	22	I	$\overline{CE}$ ($\overline{E}$)
7	I	A5	23	I	A10
8	I	A4	24	I	$\overline{OE}$ ($\overline{G}$)
9	I	A3	25	I	A11
10	I	A2	26	I	A9
11	I	A1	27	I	A8
12	I	A0	28	I	A13
13	I/O	DQ0	29	I	A14
14	I/O	DQ1	30	—	NC
15	I/O	DQ2	31	I	$\overline{WE}$ ($\overline{W}$)
16	—	GND	32	—	VDD

INPUT
A0-A16 ; ADDRESS (0-16)
CE ; CHIP ENABLE
OE ; OUTPUT ENABLE
WE ; WRITE ENABLE

OUTPUT
DQ0-DQ7 ; DATA (0-7)

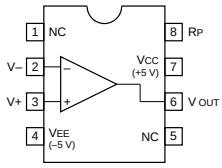
OPERATION	$\overline{CE}$	$\overline{OE}$	$\overline{WE}$	A0	A1	A9	I/O
AUTO-SELECT MANUFACTURER CODE (1)	0	0	1	0	0	VID	CODE
AUTO-SELECT DEVICE CODE (1)	0	0	1	1	0	VID	CODE
READ	0	0	1	A0	A1	A9	DOUT
STANDBY	1	X	X	X	X	X	HI-Z
OUTPUT DISABLE	0	1	1	X	X	X	HI-Z
WRITE	0	1	0	A0	A1	A9	DIN (2)
ENABLE SECTOR PROTECT	0	VID	0	X	X	VID	X
VERIFY SECTOR PROTECT (3)	0	0	1	0	1	VID	CODE

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE



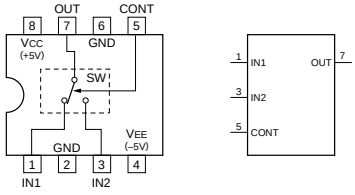
CLC505AJE (COMLINEAR)FLAT PACKAGE

OPERATIONAL AMPLIFIER
— TOP VIEW —



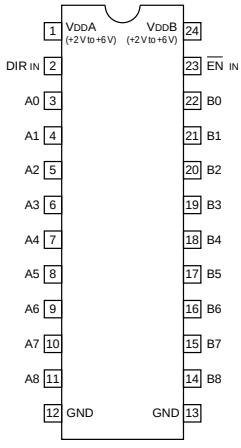
CXA1450M-TH (SONY)FLAT PACKAGE

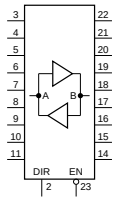
VIDEO SIGNAL SWITCH
-TOP VIEW-



HD151015T (HITACHI)FLAT PACKAGE
HD151015TEL

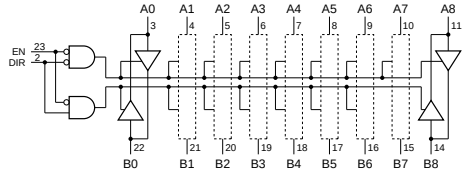
C-MOS 9-BIT LEVEL SHIFTER/TRANSCEIVER WITH 3-STATE OUTPUTS
— TOP VIEW —





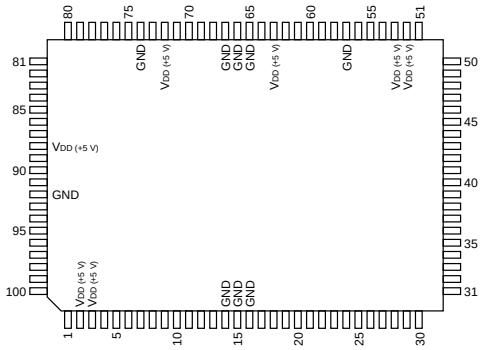
EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE



CXD8953Q (SONY)

C-MOS ERROR DETECTION AND HANDLING
- TOP VIEW -



(VDD = +5 V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	O	TEST0	21	I	IDATA8	41	I	TEST6	61	O	ODATA8	81	O	APERR
2	—	VDD	22	I	IDATA9	42	I	A3	62	O	ODATA7	82	O	FFERR
3	—	VDD	23	I	FORM0	43	I	A2	63	—	VDD	83	O	ANCER
4	O	TEST1	24	I	FORM1	44	I	A1	64	O	ODATA6	84	I/O	ANCEDH
5	O	TEST2	25	I	AUTO	45	I	A0	65	—	GND	85	I/O	ANCEDA
6	I	TEST3	26	I	MODE0	46	I	$\overline{\text{WRITE}}$	66	—	GND	86	I/O	ANCIDH
7	I	TEST4	27	I	MODE1	47	I	$\overline{\text{READ}}$	67	—	GND	87	I/O	ANCIDA
8	O	TEST5	28	I	MODE2	48	I	$\overline{\text{CS}}$	68	O	ODATA5	88	—	VDD
9	I	ICLOCK	29	O	OTHANC	49	O	TEST7	69	O	ODATA4	89	I/O	ANCUES
10	I	IDATA0	30	O	EDHVLD	50	I	TEST8	70	O	ODATA3	90	I/O	APEDH
11	I	IDATA1	31	O	DPR	51	I	$\overline{\text{RESET}}$	71	O	ODATA2	91	I/O	APEDA
12	I	IDATA2	32	O	INTR	52	—	VDD	72	—	VDD	92	—	GND
13	I	IDATA3	33	I/O	D7	53	—	VDD	73	O	ODATA1	93	I/O	APIDH
14	—	GND	34	I/O	D6	54	O	TEST9	74	—	GND	94	I/O	APIDA
15	—	GND	35	I/O	D5	55	O	TEST10	75	O	ODATA0	95	I/O	APUES
16	—	GND	36	I/O	D4	56	O	TEST13	76	O	TEST13	96	I/O	FFEDH
17	I	IDATA4	37	I/O	D3	57	—	GND	77	O	OD1	97	I/O	FFEDA
18	I	IDATA5	38	I/O	D2	58	O	TEST12	78	O	OL525	98	I/O	FFIDH
19	I	IDATA6	39	I/O	D1	59	O	OCLOCK	79	I	TEST14	99	I/O	FFIDA
20	I	IDATA7	40	I/O	D0	60	O	ODATA9	80	I	TEST15	100	I/O	FFUES

INPUT

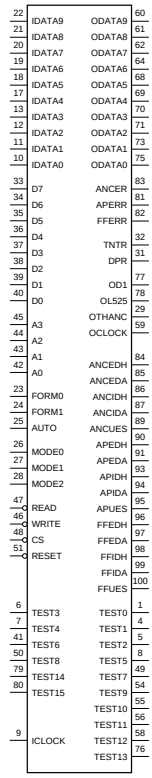
A0 - A3	; ADDRESS
$\overline{\text{AUTO}}$	; AUTO DETECT
$\overline{\text{CS}}$	; CHIP SELECT
FORM0, FORM1	; VIDEO FORMAT
ICLOCK	; CLOCK
IDATA0 - IDATA9	; VIDEO DATA
MODE0	; 1 = Detect each FLAG and calculate CRC. Add the result and output. 0 = Input each FLAG from outside and calculate CRC. Add the result and output.
MODE1	; 1 = If other ANCILLARY DATA existe EDH, such as AUDIO, no EDH is added. 0 = EDH is added unconditionally.
MODE2	; MODE SELECT
$\overline{\text{READ}}$	; READ
$\overline{\text{RESET}}$	; RESET
TEST3, TEST4, TEST6, TEST8, TEST14, TEST15	; TEST
$\overline{\text{WRITE}}$	; WRITE

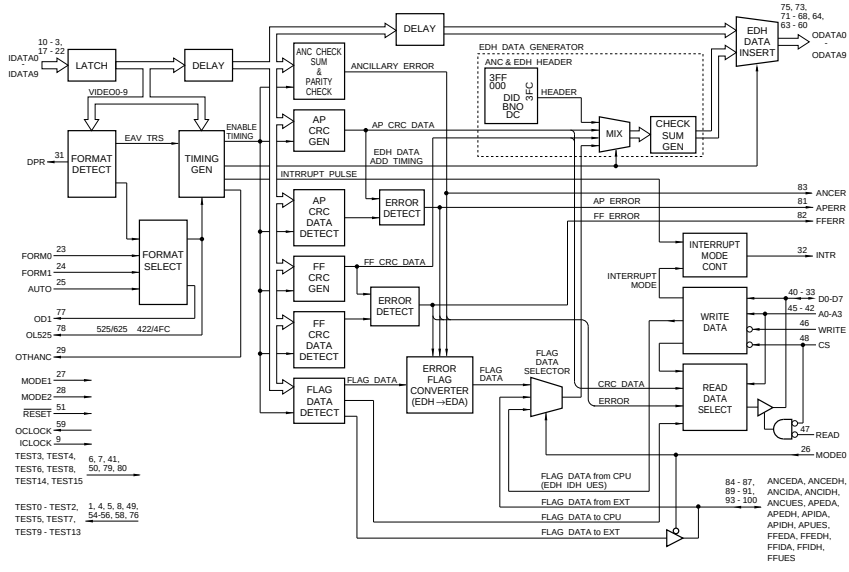
OUTPUT

ANCER	; ANCILLARY DATA ERROR
APERR	; ACTIVE PICTURE ERROR
DPR	; INPUT SIGNAL DETECT
EDHVLB	; ERROR DETECTION & HANDLING CORRESPOND DETECT
FFERR	; FULL FIELD ERROR
INTR	; INTERRUPT
OCLOCK	; OUTPUT CLOCK
OD1	; D1/D2 FORMAT SELECT
ODATA0 - ODATA9	; OUTPUT DATA
OL525	; 525/625, 422/4FC FORMAT SELECT
OTHANC	; OTHER ANC DATA DETECT
TEST0 - TEST2, TEST5, TEST7, TEST9 - TEST13	; TEST

INPUT / OUTPUT

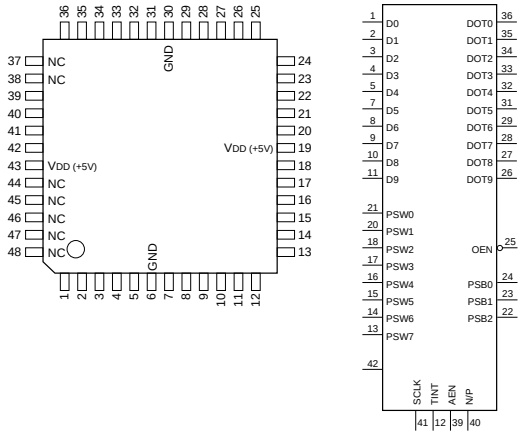
ANCEDA	; ANCILLARY EDA FLAG
ANCEDH	; ANCILLARY EDH FLAG
ANCIDA	; ANCILLARY IDA FLAG
ANCIDH	; ANCILLARY IDH FLAG
ANCUES	; ANCILLARY UES FLAG
APEDA	; ACTIVE PICTURE EDA FLAG
APEDH	; ACTIVE PICTURE EDH FLAG
APIDA	; ACTIVE PICTURE IDA FLAG
APIDH	; ACTIVE PICTURE IDH FLAG
APUES	; ACTIVE PICTURE UES FLAG
D0 - D7	; CPU DATA
FFEDA	; FULL FIELD EDA FLAG
FFEDH	; FULL FIELD EDH FLAG
FFIDA	; FULL FIELD IDA FLAG
FFIDH	; FULL FIELD IDH FLAG
FFUES	; FULL FIELD UES FLAG





CXK1203AR (SONY)
CXK1203AR-T4

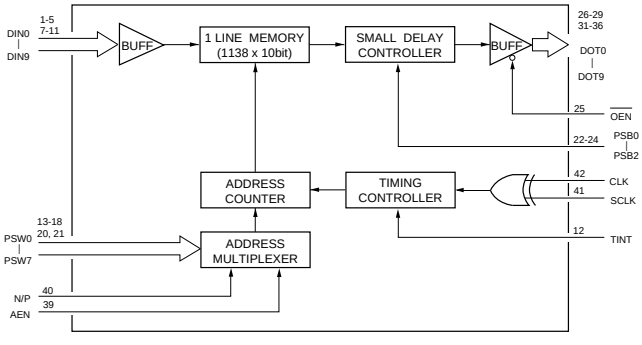
C-MOS DIGITAL LINE MEMORY
—TOP VIEW—



(VDD = +5V)

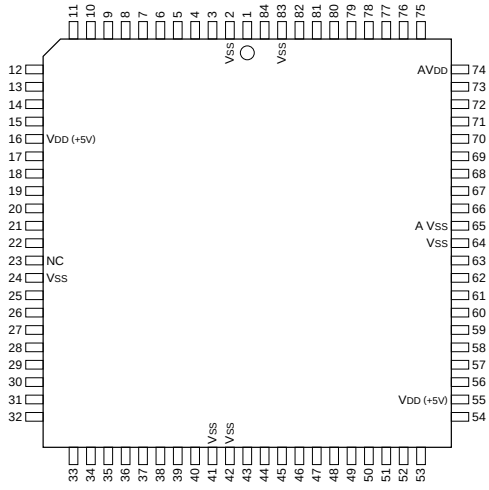
PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	I	D0	13	I	PSW7	25	I	$\overline{OEN}$	37	—	N.C
2	I	D1	14	I	PSW6	26	O	DOT9	38	—	N.C
3	I	D2	15	I	PSW5	27	O	DOT8	39	I	AEN
4	I	D3	16	I	PSW4	28	O	DOT7	40	I	N/P
5	I	D4	17	I	PSW3	29	O	DOT6	41	I	SCLK
6	—	GND	18	I	PSW2	30	—	GND	42	I	CLK
7	I	D5	19	—	VDD	31	O	DOT5	43	—	VDD
8	I	D6	20	I	PSW1	32	O	DOT4	44	—	N.C
9	I	D7	21	I	PSW0	33	O	DOT3	45	—	N.C
10	I	D8	22	I	PSB2	34	O	DOT2	46	—	N.C
11	I	D9	23	I	PSB1	35	O	DOT1	47	—	N.C
12	I	TINT	24	I	PSB0	36	O	DOT0	48	—	N.C

AEN ; LINE MEMORY SELECT
CLK ; CLOCK
DIN0-DIN9 ; VIDEO DATA INPUT
DOT0-DOT9 ; VIDEO DATA OUTPUT
N/P ; NTSC/PAL/SECAM SELECT
OEN ; OUTPUT ENABLE
PSB0-PSB2 ; DELAY STEP SELECT (1 BITxN)
PSW0-PSW7 ; DELAY STEP SELECT (8 BITxN)
SCLK ; CLOCK EDGE SELECT
TINT ; TEST



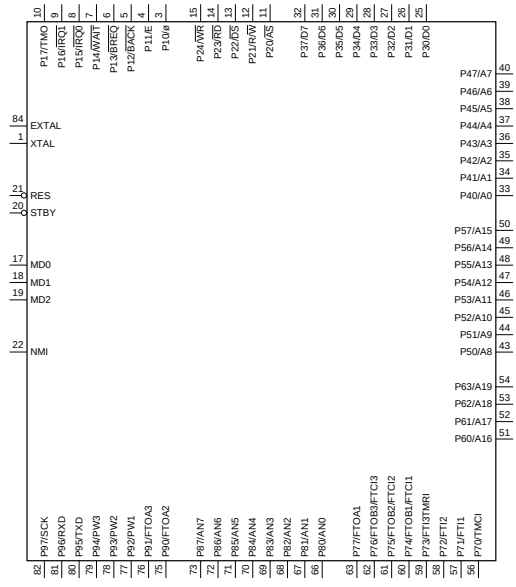
HD6475328CP10 (HITACHI)

16-BIT CPU
-TOP VIEW-



(VDD=+5V)

PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	XTAL	29	I/O	P34/D4	57	I/O	P71/FTI1
2	—	VSS	30	I/O	P35/D5	58	I/O	P72/FTI2
3	I/O	P10/ø	31	I/O	P36/D6	59	I/O	P73/FTI3/TMRI
4	I/O	P11/E	32	I/O	P37/D7	60	I/O	P74/FTOB1/FTCI1
5	I/O	P12/$\overline{BACK}$	33	I/O	P40/A0	61	I/O	P75/FTOB2/FTCI2
6	I/O	P13/$\overline{BREQ}$	34	I/O	P41/A1	62	I/O	P76/FTOB3/FTCI3
7	I/O	P14/$\overline{WAIT}$	35	I/O	P42/A2	63	O	P77/FTOA1
8	I/O	P15/$\overline{IRQ0}$	36	I/O	P43/A3	64	—	VSS
9	I/O	P16/$\overline{IRQ1}$	37	I/O	P44/A4	65	—	A VSS
10	I/O	P17/TMO	38	I/O	P45/A5	66	I/O	P80/AN0
11	I/O	P20/$\overline{AS}$	39	I/O	P46/A6	67	I/O	P81/AN1
12	I/O	P21/R/$\overline{W}$	40	I/O	P47/A7	68	I/O	P82/AN2
13	I/O	P22/$\overline{DS}$	41	—	VSS	69	I/O	P83/AN3
14	I/O	P23/$\overline{RD}$	42	—	VSS	70	I/O	P84/AN4
15	I/O	P24/$\overline{WR}$	43	I/O	P50/A8	71	I/O	P85/AN5
16	—	VDD	44	I/O	P51/A9	72	I/O	P86/AN6
17	I	MD0	45	I/O	P52/A10	73	I/O	P87/AN7
18	I	MD1	46	I/O	P53/A11	74	—	AVDD
19	I	MD2	47	I/O	P54/A12	75	I/O	P90/FTOA2
20	I	STBY	48	I/O	P55/A13	76	I/O	P91/FTOA3
21	I	RES	49	I/O	P56/A14	77	I/O	P92/PW1
22	I	NMI	50	I/O	P57/A15	78	I/O	P93/PW2
23	—	NC	51	I/O	P60/A16	79	I/O	P94/PW3
24	—	VSS	52	I/O	P61/A17	80	I/O	P95/TXD
25	I/O	P30/D0	53	I/O	P62/A18	81	I/O	P96/RXD
26	I/O	P31/D1	54	I/O	P63/A14	82	I/O	P97/SCK
27	I/O	P32/D2	55	—	VDD	83	—	VSS
28	I/O	P33/D3	56	I/O	P70/TMCI	84	I	EXTAL



INPUT

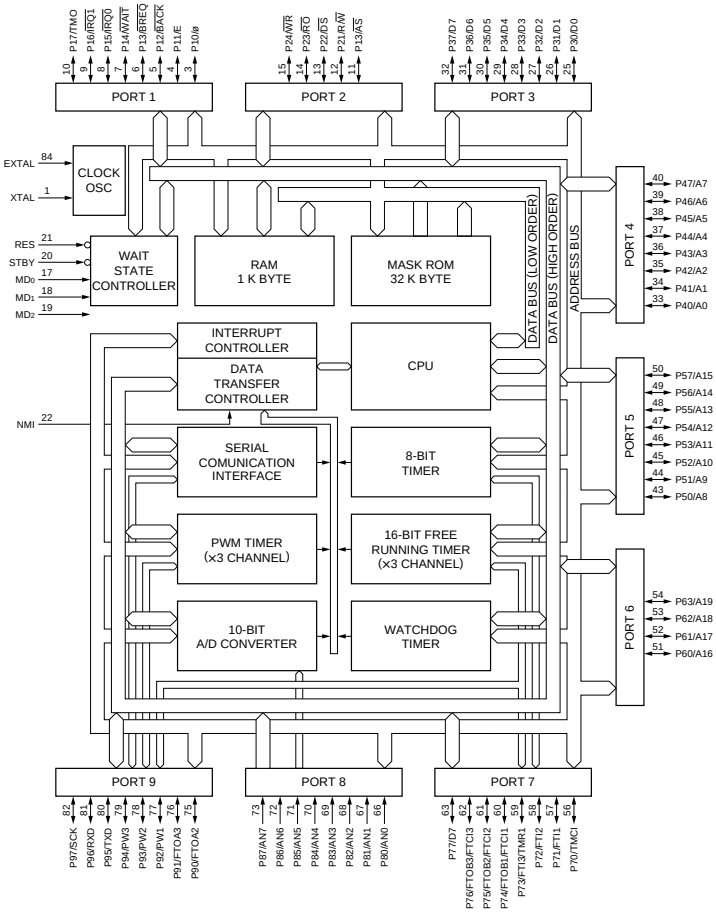
AN0-AN7	;	ANALOG INPUTS
BREQ	;	BUS REQUEST
EXRAL	;	CONNECTED TO CRYSTAL OSCILLATOR
FTCI1-FTCI3	;	FRT COUNTER CLOCK INPUTS (CHANNEL 1 TO 3)
FTI1-FTI3	;	FRT INPUT CAPTURE INPUTS (CHANNEL 1 TO 3)
IRQ0, 1	;	INTERRUPTION REQUEST 0 AND 1
MD0-MD2	;	MODE SETTING
NMI	;	NON MASKABLE INTERRUPTION
P80-P87	;	PORT 8
RES	;	RESET
RXD	;	RECEIVE DATA
STBY	;	STANDBY
TMCI	;	8-BIT TIMER CLOCK INPUT
TMRI	;	8-BIT TIMER COUNTER RESET INPUT
WAIT	;	WAIT
XRAL	;	CONNECTED TO CRYSTAL OSCILLATOR

OUTPUT

A0-A19	;	ADDRESS BUS
AS	;	ADDRESS STROBE
BACK	;	BUS REQUEST ACKNOWLEDGE
DS	;	DATA STROBE
E	;	ENABLE CLOCK
FTOA1-FTOA3	;	FRT OUTPUT COMPARE A OUTPUT (CHANNEL 1 TO 3)
FTOB1-FTOB3	;	FRT OUTPUT COMPARE B OUTPUT (CHANNEL 1 TO 3)
PW1-PW3	;	PWM TIMER OUTPUT (CHANNEL 1 TO 3)
R/W	;	READ/WRITE
RD	;	READ
TMO	;	8-BIT TIMER OUTPUT
TXD	;	SEND DATA
WR	;	WRITE
ø	;	SYSTEM CLOCK

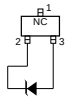
INPUT/OUTPUT

D0-D7	;	DATA BUS
P10-P17	;	PORT 1
P20-P24	;	PORT 2
P30-P37	;	PORT 3
P40-P47	;	PORT 4
P50-P57	;	PORT 5
P60-P63	;	PORT 6
P70-P77	;	PORT 7
P90-P97	;	PORT 9
SCK	;	SERIAL CLOCK INPUT/OUTPUT



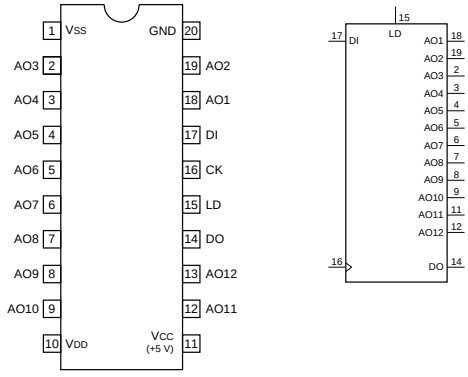
LM4040AIM3-2.5 (NS)
LM4040BIM3-5.0 (NS)
LM4040BIM3X-5.0

PRECISION MICROPOWER SHUNT VOLTAGE REFERENCE
— TOP VIEW —



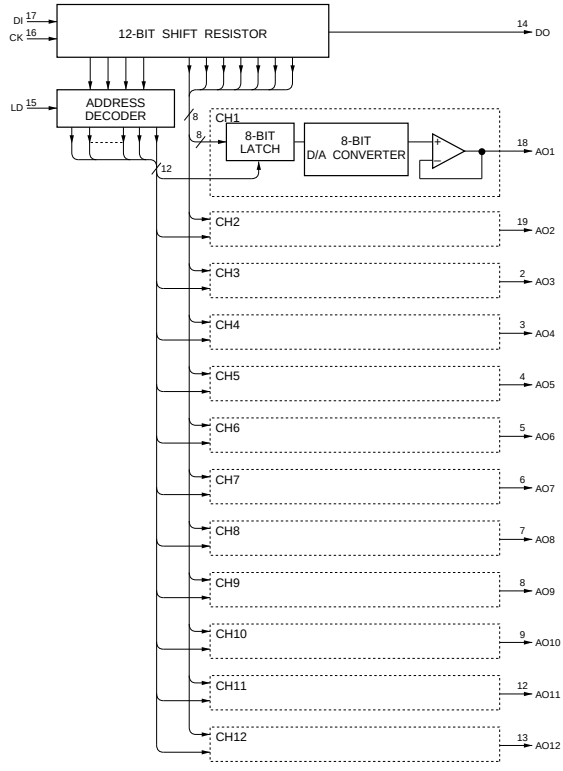
M62352GP-75ED (MITSUBISHI)FLAT PACKAGE

C-MOS 8-BITx12 CHANNEL D/A CONVERTER
(WITH BUFFER OPERATIONAL AMPLIFIER)
— TOP VIEW —



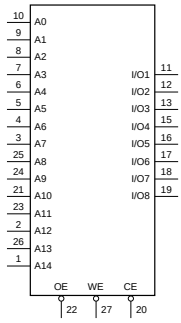
AO1-AO12	;	8-BIT D/A OUTPUTS
CK	;	CLOCK INPUT
DI	;	SERIAL DATA INPUT
DO	;	DATA OUTPUT

NOTE:
3.5 V < V_{DD} < V_{CC}
−3.5 V < V_{SS} < V_{CC}



CXK58257BTM-10LL (SONY)FLAT PACKAGE
CXK58257BTM-10LL-T6

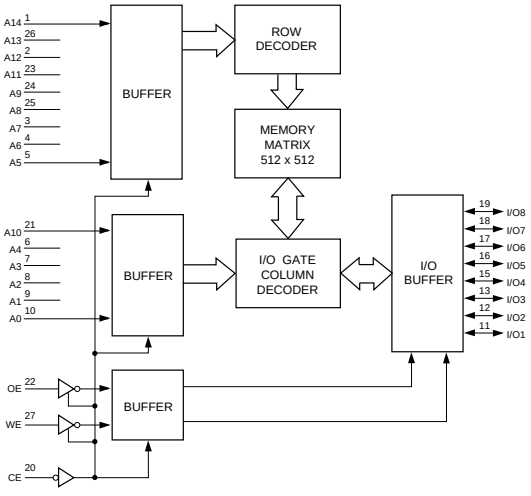
C-MOS 256K (32768 x 8)-BIT STATIC RAM
—TOP VIEW—



A0-A14 ; ADDRESS INPUTS
CE ; CHIP ENABLE INPUT
I/O1-I/O8 ; DATA INPUTS/OUTPUTS
OE ; OUTPUT ENABLE INPUT
WE ; WRITE ENABLE INPUT

CE	OE	WE	MODE	I/O TERMINAL
1	X	X	NOT SELECT	HIGH IMPEDANCE
0	1	1	OUTPUT DISABLE	HIGH IMPEDANCE
0	0	1	READ	OUTPUT DATA
0	X	0	WRITE	INPUT DATA

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

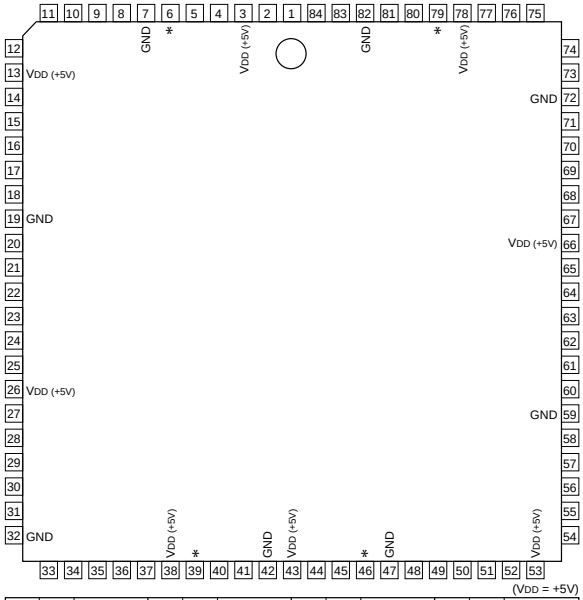


http://getMANUAL.com

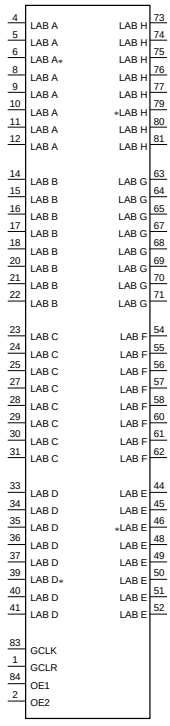
EPM7128ELC84-15 (ALTERA)

C-MOS ELECTRICAL ERASABLE PLD

—TOP VIEW—



(VDD = +5V)

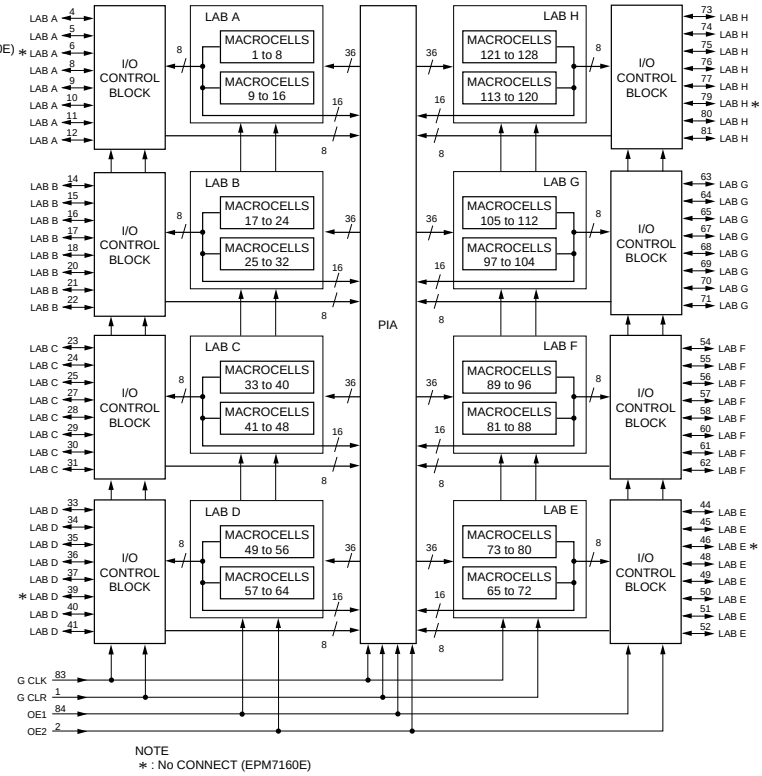


PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL	PIN No.	I/O	SIGNAL
1	I	GCLR	22	I/O	LAB B	43	—	VDD	64	I/O	LAB G
2	I	OE2	23	I/O	LAB C	44	I/O	LAB E	65	I/O	LAB G
3	—	VDD	24	I/O	LAB C	45	I/O	LAB E	66	—	VDD
4	I/O	LAB A	25	I/O	LAB C	46	I/O	LAB E*	67	I/O	LAB G
5	I/O	LAB A	26	—	VDD	47	—	GND	68	I/O	LAB G
6	I/O	LAB A*	27	I/O	LAB C	48	I/O	LAB E	69	I/O	LAB G
7	—	GND	28	I/O	LAB C	49	I/O	LAB E	70	I/O	LAB G
8	I/O	LAB A	29	I/O	LAB C	50	I/O	LAB E	71	I/O	LAB G
9	I/O	LAB A	30	I/O	LAB C	51	I/O	LAB E	72	—	GND
10	I/O	LAB A	31	I/O	LAB C	52	I/O	LAB E	73	I/O	LAB H
11	I/O	LAB A	32	—	GND	53	—	VDD	74	I/O	LAB H
12	I/O	LAB A	33	I/O	LAB D	54	I/O	LAB F	75	I/O	LAB H
13	—	VDD	34	I/O	LAB D	55	I/O	LAB F	76	I/O	LAB H
14	I/O	LAB B	35	I/O	LAB D	56	I/O	LAB F	77	I/O	LAB H
15	I/O	LAB B	36	I/O	LAB D	57	I/O	LAB F	78	—	VDD
16	I/O	LAB B	37	I/O	LAB D	58	I/O	LAB F	79	I/O	LAB H*
17	I/O	LAB B	38	—	VDD	59	—	GND	80	I/O	LAB H
18	I/O	LAB B	39	I/O	LAB D*	60	I/O	LAB F	81	I/O	LAB H
19	—	GND	40	I/O	LAB D	61	I/O	LAB F	82	—	GND
20	I/O	LAB B	41	I/O	LAB D	62	I/O	LAB F	83	I	GCLK
21	I/O	LAB B	42	—	GND	63	I/O	LAB G	84	I	OE1

INPUT
GCLK ; GROBAL CLOCK
GCLR ; GROBAL CLEAR
OE1, 2 ; OUTPUT ENABLE 1, 2

INPUT/OUTPUT
LAB A ; LOGIC ARRAY BLOCK A
LAB B ; LOGIC ARRAY BLOCK B
LAB C ; LOGIC ARRAY BLOCK C
LAB D ; LOGIC ARRAY BLOCK D
LAB E ; LOGIC ARRAY BLOCK E
LAB F ; LOGIC ARRAY BLOCK F
LAB G ; LOGIC ARRAY BLOCK G
LAB H ; LOGIC ARRAY BLOCK H

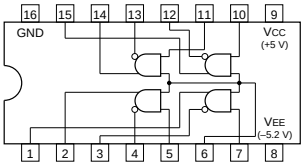
NOTE
*; No CONNECT (EPM7160E)



NOTE
* : No CONNECT (EPM7160E)

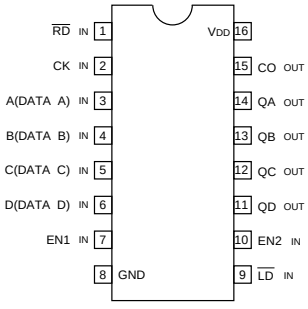
MC10H124M (MOTOROLA)FLAT PACKAGE

ECL TTL-TO-ECL TRANSLATOR
-TOP VIEW-



MC74HC163AF (MOTOROLA)FLAT PACKAGE
TC74VHC163F (TOSHIBA)FLAT PACKAGE
TC74VHC163F(EL)

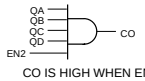
C-MOS PRESETTABLE SYNCHRONOUS 4-BIT BINARY COUNTER
—TOP VIEW—



MODE SELECTION

CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (SYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

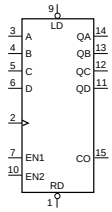
CARRY OUTPUT "CO"



CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

NOTE:

TYPE	VDD
HC	+2 to +6V
AC/VHC	+2 to +5.5V
HCT/ACT/FCT	+5V

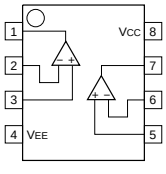


COUNT SEQUENCE

COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

NJM062V(TE2) (JRC)FLAT PACKAGE(SMALL)
TL062CPS (TI)FLAT PACKAGE
TL062CPS-E05

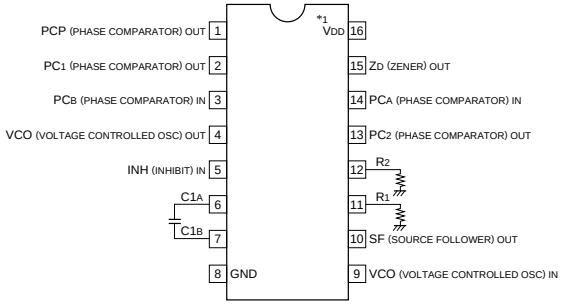
DUAL OPERATIONAL AMPLIFIERS
(DUAL-SUPPLY TYPE)
–TOP VIEW–

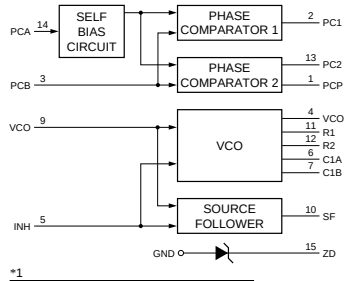


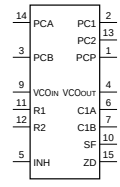
TYPE	VCC	VEE
062/072/082/4556A/ M5218/BA15218/ 33178/34182 TYPES	+2 to +16V	−2 to −16V
4580 TYPE	+2 to +18V	−2 to −18V
5532 TYPE	+3 to +20V	−3 to −20V
CXA1297 TYPE	+5 to +12V	−5 to −12V
M5219/M5220 TYPES	+5 to +22.5V	−5 to −22.5V
NJM2100 TYPE	+1 to +3.5V	−1 to −3.5V
OP-297 TYPE	+2 to +20V	−2 to −20V
OTHERS	+5 to +16V	−5 to −16V

MC74HC4046AF (MOTOROLA)FLAT PACKAGE
MC74HC4046AFEL

C-MOS PHASE LOCKED LOOP
-TOP VIEW-





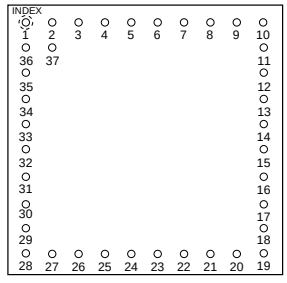


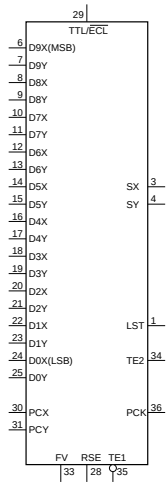
*1

TYPE	VDD
CD4046BE HD14046BP MC14046BCP MC14046BF TC4046BP	+3 to +8V
CD74HC4046AM MC74HC4046AF MC74HC4046AN	+2 to +6V

SBX1601A (SONY)

8- OR 10-BIT PARALLEL-TO-SERIAL CONVERTER
-BOTTOM VIEW-





INPUT
D9X – D0X, D9Y – D0Y; PARALLEL DATA INPUTS
PCX, PCY ; PARALLEL CLOCK INPUTS
FV ; VCO FREQ. ADJ. INPUT
RSE ; VCO RANGE SELECT INPUT (H : HIGH RANGE)
TE1 ; TEST TERMINAL (LOW = TEST)
TTL/ECL ; VCC FOR INPUT LEVEL SELECT (+5 V = TTL, GND = ECL)

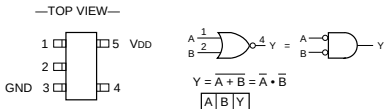
OUTPUT
LST ; PLL LOCK DETECT OUTPUT (H : LOCK)
PCK ; PARALLEL CLOCK OUTPUT
SX, SY ; SERIAL DATA OUTPUTS
TE2 ; TEST TERMINAL

VEE1 = –5 V
VEE2 = –3.5 V

PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL	PIN NO.	I/O	SIGNAL
1	O	LST	11	I	D7Y	21	I	D2Y	31	I	PCY
2	–	GND	12	I	D6X	22	I	D1X	32	–	GND
3	O	SX	13	I	D6Y	23	I	D1Y	33	I	FV
4	O	SY	14	I	D5X	24	I	D0X(LSB)	34	O	TE2
5	–	GND	15	I	D5Y	25	I	D0Y	35	I	TE1
6	I	D9X(MSB)	16	I	D4X	26	–	VEE1	36	O	PCK
7	I	D9Y	17	I	D4Y	27	–	VEE2	37	–	NC
8	I	D8X	18	I	D3X	28	I	RSE			
9	I	D8Y	19	I	D3Y	29	–	TTL/ECL			
10	I	D7X	20	I	D2X	30	I	PCX			

SC7S02F (MOTOROLA)CHIP PACKAGE
TC7S02F(TE85R)

C-MOS 2-INPUT NOR GATE



A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

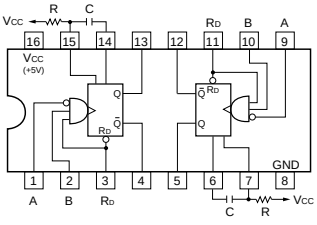
0 ; LOW LEVEL
1 ; HIGH LEVEL

TYPE	VDD
4S01F	+3 to +18V
7S02F	+2 to +6V
7S02FU	
7SH02FU	

SN74LS123NS-E05 (TI)FLAT PACKAGE

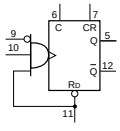
TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATORS WITH DIRECT RESET

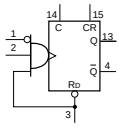
—TOP VIEW—



INPUTS			OUTPUTS	
RD	A	B	Q	$\overline{Q}$
0	X	X	0	1
X	1	X	0	1
X	X	0	0	1
1	0	↑	⊓	⊔
1	↓	1	⊓	⊔
↓	0	1	⊓	⊔

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE





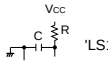
OUTPUT PULSE WIDTH

'123 ;TW=0.28 (1+ $\frac{700}{R}$) CR

'L123;TW=0.33 (1+ $\frac{700}{R}$) CR

'123 ;TW=0.25 (1+ $\frac{700}{R}$) CR

'L123;TW=0.29 (1+ $\frac{700}{R}$) CR

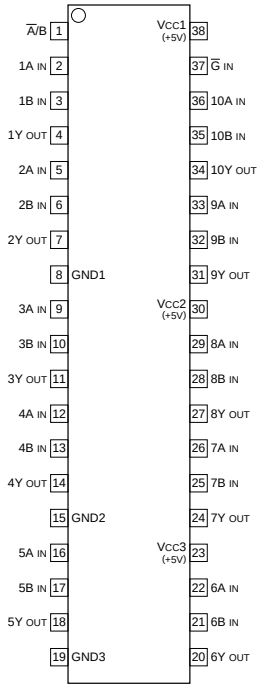


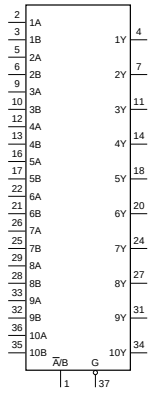
'LS123;TW=0.45CR

SN74ALS38157ADB (TI)FLAT PACKAGE
SN74ALS38157ADB-E05

10-BIT 1 OF 2 DATA SELECTORS/MULTIPLEXERS

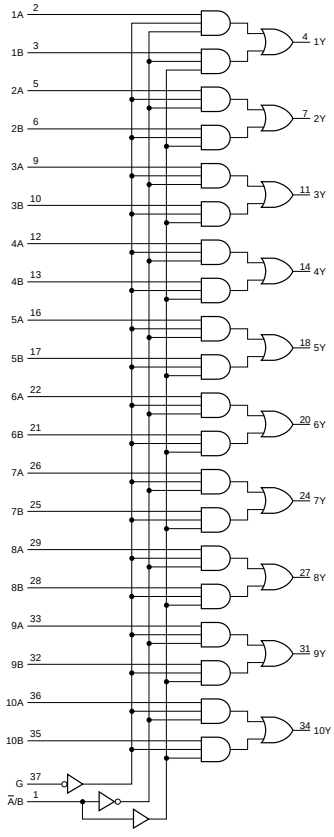
-TOP VIEW-





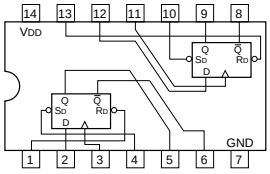
INPUTS				OUT
G	$\overline{A}$/B	A	B	Y
1	X	X	X	0
0	0	0	X	0
0	0	1	X	1
0	1	X	0	0
0	1	X	1	1

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



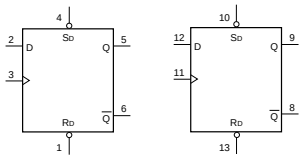
SN74LVC74NS-E05 (TI)FLAT PACKAGE
TC74VHC74F(EL) (TOSHIBA)
TC74VHCT74F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS DUAL D-TYPE FLIP-FLOPS WITH DIRECT SET/RESET
-TOP VIEW-



INPUTS				OUTPUTS	
$\overline{SD}$	$\overline{RD}$	CK	D	Qn+1	$\overline{Qn+1}$
0	1	×	×	1	0
1	0	×	×	0	1
0	0	×	×	1	1
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	0	×	Qn	$\overline{Qn}$

0 ; LOW LEVEL
1 ; HIGH LEVEL
× ; DON'T CARE

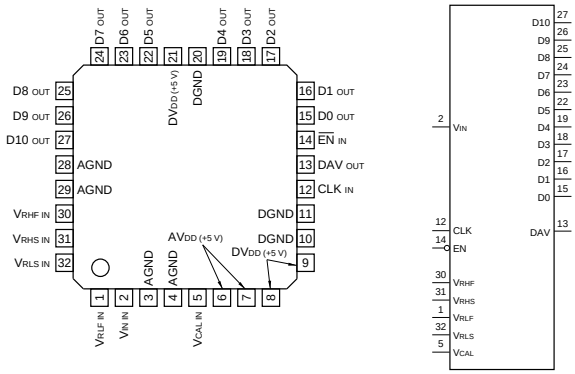


NOTE:

TYPE	VDD
74HCT/74ACT	+4.5 to +5.5V
74LVC	+2.7 to +3.6V
74AC/74VHC	+2 to +5.5V
OTHERS	+2 to +6V

SPT7860SCT (SIGNAL PROCESSING TECHNOLOGIES)

C-MOS 10-BIT A/D CONVERTER
– TOP VIEW –



INPUT

CLK	; CLOCK $f_{CLK} = f_S$
$\overline{EN}$	; OUTPUT ENABLE
V_{CAL}	; CALIBRATION REFERENCE
V_{IN}	; ANALOG VOLTAGE
V_{RHF}	; REFERENCE HIGH FORCE
V_{RHS}	; REFERENCE HIGH SENCE
V_{RLF}	; REFERENCE LOW FORCE
V_{RLS}	; REFERENCE LOW SENCE

OUTPUT

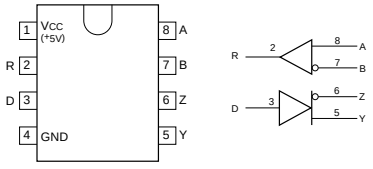
D0 - D9	; DIGITAL DATA
D10	; OVERRANGE
DAV	; DATA VALID

OTHER

AGND	; ANALOG GROUND
AV_{DD}	; ANALOG POWER SUPPLY
DGND	; DIGITAL GROUND
DV_{DD}	; DIGITAL POWER SUPPLY

SN75179BPS (TI)FLAT PACKAGE
SN75179BPS-E05

DIFFERENTIAL BUS DRIVER/RECEIVER
-TOP VIEW-



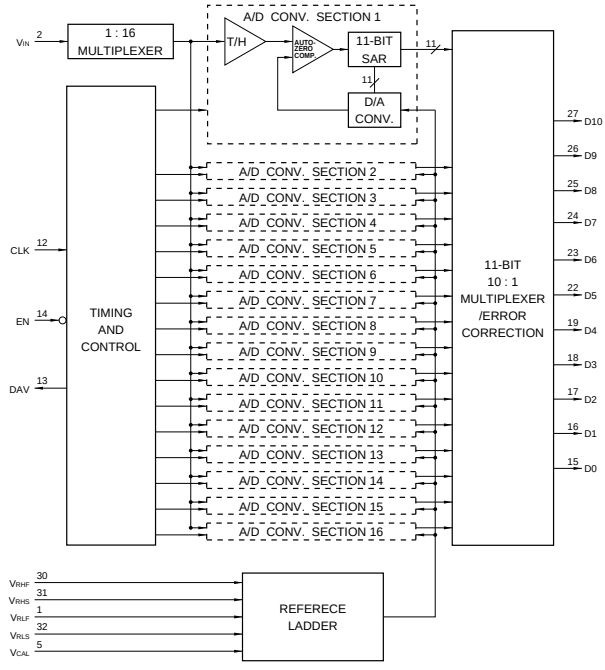
-DRIVER-

INPUT D	OUTPUTS Y	Z
H	H	L
L	L	H

-RECEIVER-

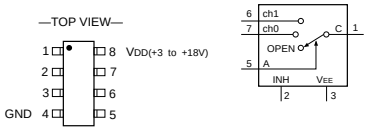
DIFFERENTIAL INPUTS A–B	OUTPUTS R
$V_{ID} \geq 0.2V$	H
$-0.2V < V_{ID} < 0.2V$	?
$V_{ID} \leqq -0.2V$	L

H = HIGH LEVEL L = LOW LEVEL ? = INDETERMINATE



TC4W53F(TE12R) (TOSHIBA)CHIP PACKAGE(5.0 × 3.1)
TC4W53FU(TE12R) (TOSHIBA)CHIP PACKAGE

C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER

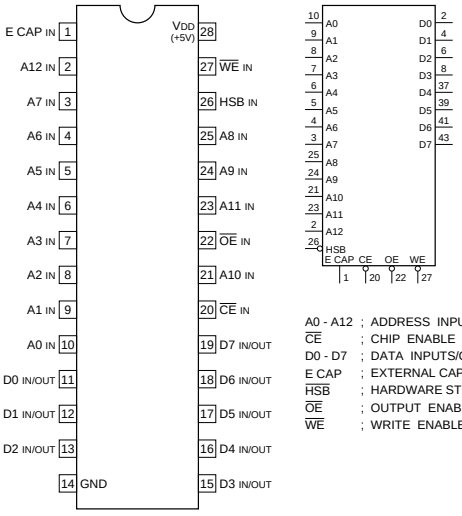


CONT.INPUT INH	A	ON CHANNEL
0	0	ch0
0	1	ch1
1	X	OPEN

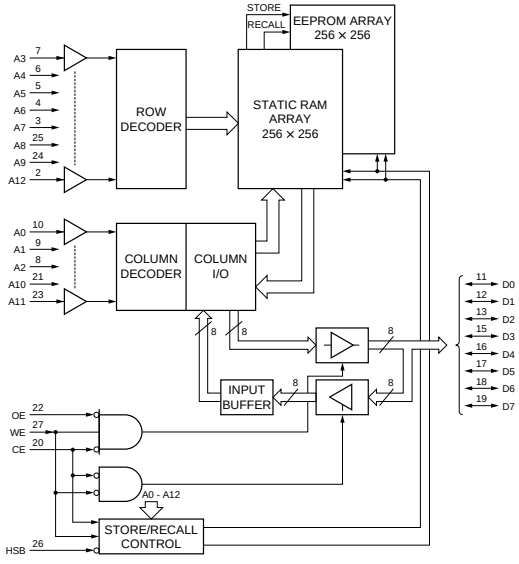
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

STK12C68-S45 (SIMTEK)FLAT PACKAGE

C-MOS 8K × 8-BIT NONVOLATILE STATIC RAM
– TOP VIEW–

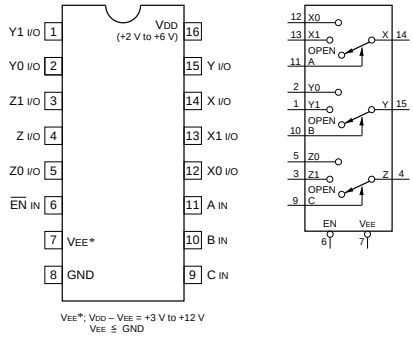

E CAP IN 1
A12 IN 2
A7 IN 3
A6 IN 4
A5 IN 5
A4 IN 6
A3 IN 7
A2 IN 8
A1 IN 9
A0 IN 10
D0 IN/OUT 11
D1 IN/OUT 12
D2 IN/OUT 13
14 GND
VDD (+5V) 28
27 WE IN
26 HSB IN
25 A8 IN
24 A9 IN
23 A11 IN
22 OE IN
21 A10 IN
20 CE IN
19 D7 IN/OUT
18 D6 IN/OUT
17 D5 IN/OUT
16 D4 IN/OUT
15 D3 IN/OUT
10 A0 9 A1 8 A2 7 A3 6 A4 5 A5 4 A6 3 A7 25 A8 24 A9 21 A10 23 A11 2 A12 26 HSB
D0 2 D1 4 D2 6 D3 8 D4 37 D5 39 D6 41 D7 43
E CAP 1 CE 20 OE 22 WE 27

A0 - A12 ; ADDRESS INPUTS
$\overline{CE}$; CHIP ENABLE INPUT
D0 - D7 ; DATA INPUTS/OUTPUTS
E CAP ; EXTERNAL CAPACITOR
$\overline{HSB}$; HARDWARE STORE/BUSY
$\overline{OE}$; OUTPUT ENABLE INPUT
$\overline{WE}$; WRITE ENABLE INPUT



TC74HC4053AFS (TOSHIBA)FLAT PACKAGE
TC74HC4053AFS-EL

C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXER/DEMULTIPLEXER
-TOP VIEW-



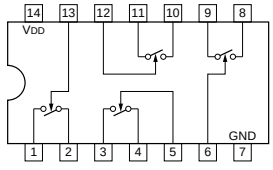
VEE*; VDD – VEE = +3 V to +12 V
VEE ≦ GND

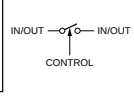
CONTROL INPUTS				ON CHANNEL		
EN	SELECT					
	C	B	A			
0	0	0	0	Z0	Y0	X0
0	0	0	1	Z0	Y0	X1
0	0	1	0	Z0	Y1	X0
0	0	1	1	Z0	Y1	X1
0	1	0	0	Z1	Y0	X0
0	1	0	1	Z1	Y0	X1
0	1	1	0	Z1	Y1	X0
0	1	1	1	Z1	Y1	X1
1	X	X	X	OPEN		

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC74HC4066AFS-EL (TOSHIBA)FLAT PACKAGE

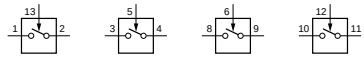
C-MOS BILATERAL ANALOG SWITCH
-TOP VIEW-





CONTROL	SWITCH
0	OFF
1	ON

0 ; LOW LEVEL
1 ; HIGH LEVEL

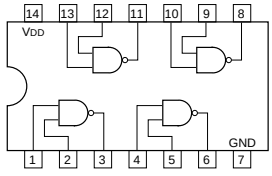


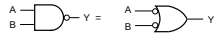
NOTE :

TYPE	VDD
MC74HC4066N	+3 to +12V
TC74HC4066AFS	+2 to +12V
OTHER TYPES	+2 to +6V

TC74VHC00F (TOSHIBA)FLAT PACKAGE
TC74VHC00F(EL)
TC74VHCT00F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS QUAD 2-INPUT NAND GATES
-TOP VIEW-





$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

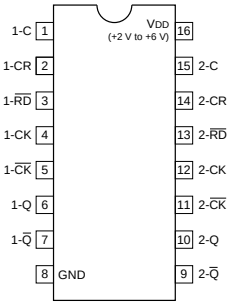
NOTE:

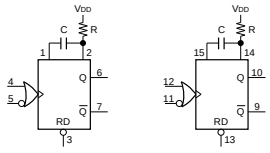
TYPE	VDD
74AC/74VHC	+2 to +5.5V
74ACT/74HCT/74VHCT	+4.5 to +5.5V
LCX	+2 to +3.6V
OTHER TYPES	+2 to +6V

TC74HC4538AF (TOSHIBA)FLAT PACKAGE

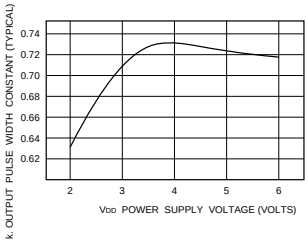
C-MOS DUAL RETRIGGERABLE / NON-RETRIGGERABLE MONOSTABLE MULTIVIBRATOR

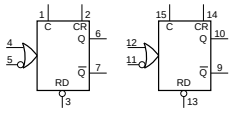
-TOP VIEW -



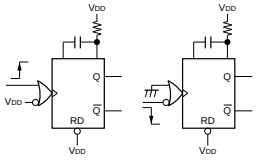


OUTPUT PULSE WIDTH = k · C · R

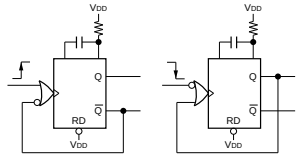




RETRIGGERABLE M. M. V



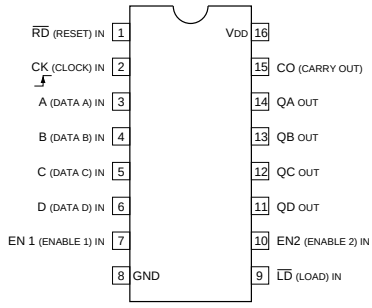
NON-RETRIGGERABLE M. M. V

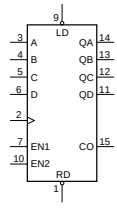


TC74VHC161F(EL) (TOSHIBA)

C-MOS SYNCHRONOUS PRESETTABLE 4-BIT BINARY COUNTER

-TOP VIEW-





MODE SELECTION

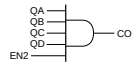
CONTROL INPUTS				MODE
RD	LD	EN1	EN2	
0	X	X	X	RESET (ASYNCHRONOUS)
1	0	X	X	PRESET (SYNCHRONOUS)
1	1	0	X	NO COUNT
1	1	X	0	NO COUNT
1	1	1	1	COUNT

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

COUNT SEQUENCE

COUNT	OUTPUTS			
	QD	QC	QB	QA
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

CARRY OUTPUT "CO"



CO IS HIGH WHEN EN2 INPUT IS HIGH AND COUNT IS "15".

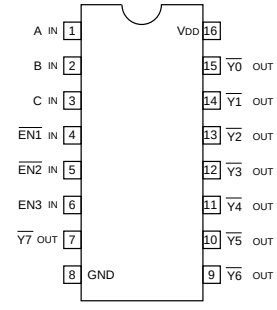
NOTE :

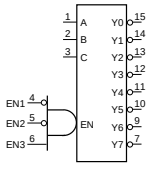
TYPE	VDD
74ACT	+5 V
TC40H	+2 to +8 V
OTHERS	+2 to +6 V

TC74VHC138FS(EL) (TOSHIBA)FLAT PACKAGE(SMALL)

C-MOS 3-TO-8 LINE DECODER / DEMULTIPLEXER

—TOP VIEW—





INPUTS				OUTPUTS							
EN	C	B	A	Y7	Y6	Y5	Y4	Y3	Y2	Y1	Y0
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

EN = $\overline{EN1}$ • $\overline{EN2}$ • EN3

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

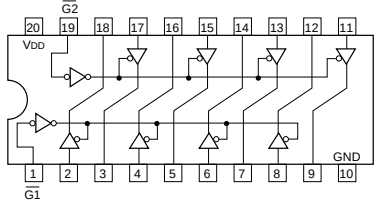
NOTE:

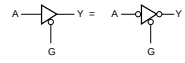
TYPE	VDD
74HCT138 TYPE	+5V
74ACT138 TYPE	+4.5 to +5.5V
TC74AC138 TYPE TC74VHC138	+2 to +5.5V
OTHER TYPES	+2 to +6V

TC74VHC244FS(EL) (TOSHIBA)FLAT PACKAGE(SMALL)

C-MOS BUS BUFFER WITH 3-STATE OUTPUTS

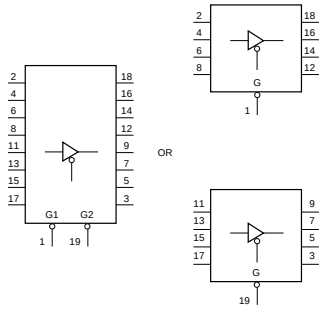
-TOP VIEW-





G	A	Y
0	0	0
0	1	1
X	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

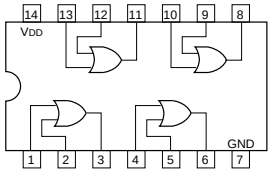


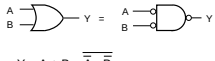
NOTE:

TYPE	VDD
74HC 40H	+2 to +6V
74ACT 74BCT 74FCT 74HCT	+4.5 to +5.5V
74LCX	+2 to +3.6V
74AC/74VHC	+2 to +5.5V

TC74VHC32F(EL) (TOSHIBA)

C-MOS QUAD 2-INPUT OR GATES
-TOP VIEW-





$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

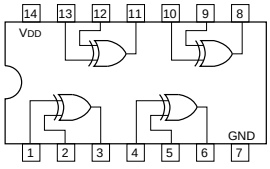
0 ; LOW LEVEL
1 ; HIGH LEVEL

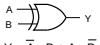
NOTE:

TYPE	VDD
74AC/74VHC	+2 to +5.5V
74HC	+2 to +6V
74HCT	+4.5 to +5.5V

TC74VHC86F (TOSHIBA)FLAT PACKAGE

C-MOS QUAD EXCLUSIVE OR GATES
-TOP VIEW-





$Y = \overline{A} \cdot B + A \cdot \overline{B}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

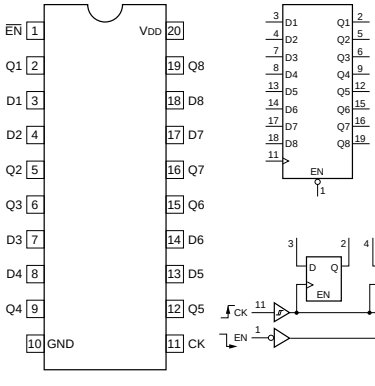
0 ; LOW LEVEL
1 ; HIGH LEVEL

NOTE :

TYPE	VDD
74AC/74VHC	+2V to +5.5V
74ACT/74HCT	+4.5 to +5.5V
OTHER TYPES	+2V to +6V

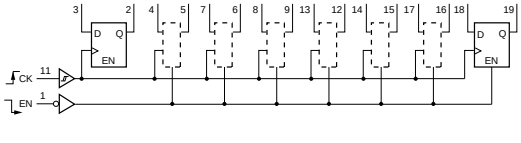
TC74VHCT374F(EL) (TOSHIBA)FLAT PACKAGE

C-MOS 3-STATE OCTAL D-TYPE FLIP-FLOP
-TOP VIEW-



INPUTS			OUT
EN	D	CK	
0	1	↑	1
0	0	↑	0
0	×	0	Q_0
1	×	×	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
× ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

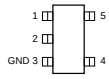


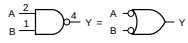
NOTE :

TYPE	VDD
74AC/74HC	+2 to +6V
74ACT/74BCT/74FCT /74HCT	+5V
74VHC	+2 to +5.5V

TC7S00F (TOSHIBA)CHIP PACKAGE

C-MOS 2-INPUT NAND GATE
— TOP VIEW —





$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

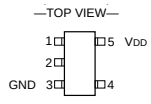
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

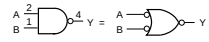
0 ; LOW LEVEL
1 ; HIGH LEVEL

TYPE	VDD
7S00F 7S00FU	+2 to +6 V
4S11F 4SU11F	+3 to +18 V
7SH00FU	+2 to +5.5 V

TC7S08F (TOSHIBA)CHIP PACKAGE
TC7S08F(TE85R)

C-MOS 2-INPUT AND GATE





$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$

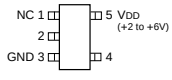
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

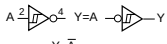
0 ; LOW LEVEL
1 ; HIGH LEVEL

TYPE	VDD
7S08F 7S08FU	+2 to +6V
4S81F 14S81F	+3 to +18V
7SH08FU	–2 to +5.5V

TC7S14F(TE85R)
TC7S14F-TE85L (TOSHIBA)CHIP PACKAGE

C-MOS SCHMITT INVERTER
-TOP VIEW-





$Y = \overline{A}$

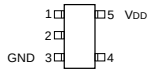
A	Y
0	1
1	0

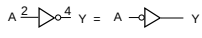
0 ; LOW LEVEL
1 ; HIGH LEVEL

TC7SH04FU (TOSHIBA)CHIP PACKAGE
TC7SH04FU-TE85R

C-MOS INVERTER

-TOP VIEW-





$Y = \overline{A}$

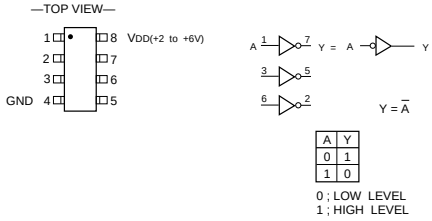
A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TYPE	VDD
7S04F 7SU04F 7SU04FU	+2 to +6V
4S69F 4SU69F	+3 to +18V
7SH04FU 7SHU04FU	+2 to +5.5V

TC7W04FU(TE12R) (TOSHIBA)FLAT PACKAGE

C-MOS HEX INVERTERS



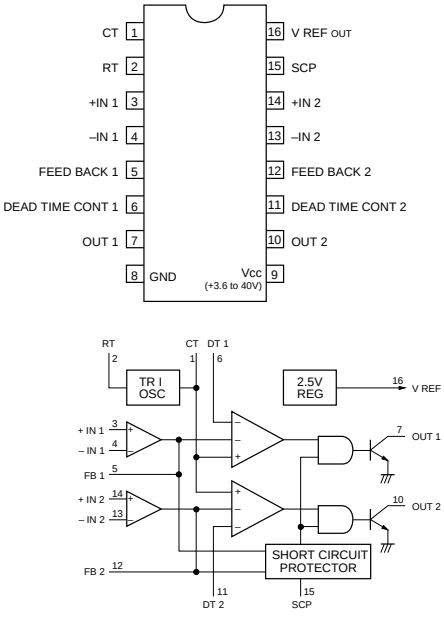
A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TL1451ACNS (TI)FLAT PACKAGE
TL1451ACNS-E05

DUAL PWM POWER CONTROLLER

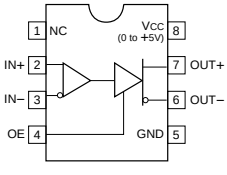
-TOP VIEW-



TL712CPS (TI)FLAT PACKAGE

HIGH SPEED COMPARATOR (TTL OUTPUT)

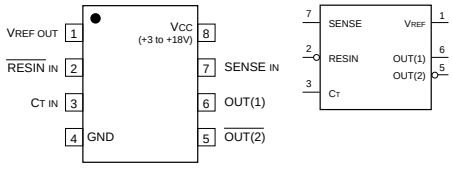
-TOP VIEW-

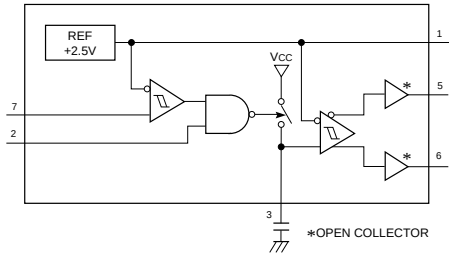


TL7705CPS-B (TI)FLAT PACKAGE
TL7705CPS-B-E05

POWER VOLTAGE SUPERVISOR

—TOP VIEW—

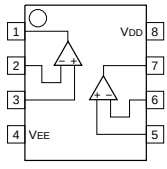




TLC272CPS (TI)FLAT PACKAGE
TLC272CPS-E05
TLC272CPW-E05 (TI)FLAT PACKAGE

C-MOS DUAL OPERATIONAL AMPLIFIERS
(SINGLE-SUPPLY TYPE)

–TOP VIEW–

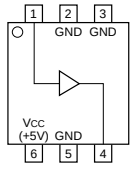


TYPE	VDD - VEE
LMC662 TYPE	+5 to +15V
OTHERS	+3 to +16V

UPC2712T-E3 (NEC)FLAT PACKAGE

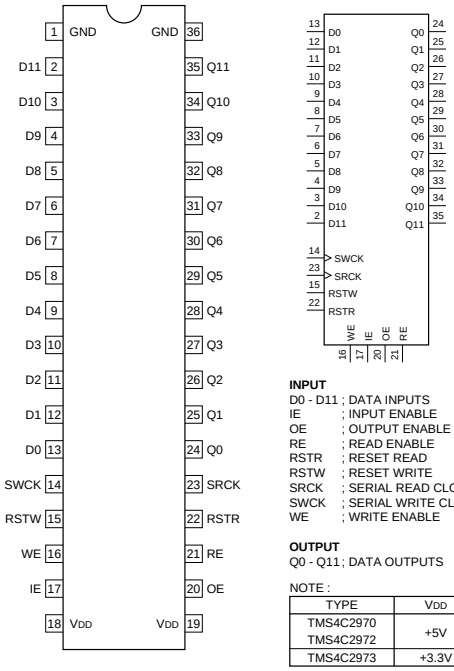
RF AMPLIFIER

-TOP VIEW-



TMS4C2973-26DTR (TI)FLAT PACKAGE

C-MOS 2.9M (245,760-WORD×12) BITS FIELD MEMORY
-TOP VIEW-

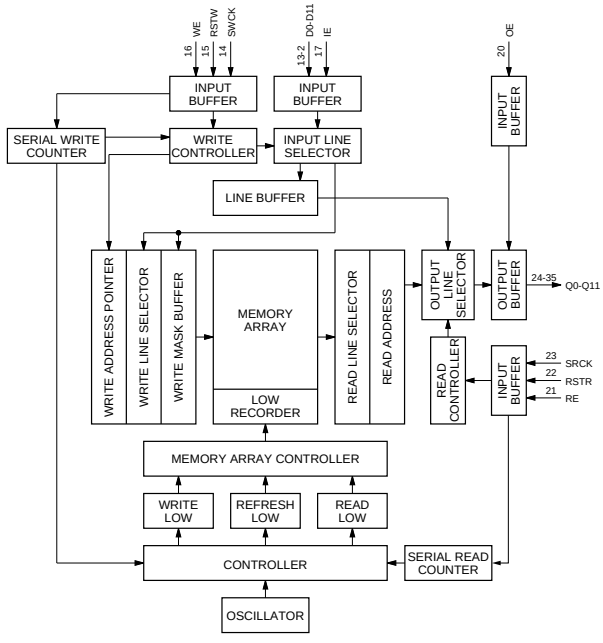


INPUT
D0 - D11 ; DATA INPUTS
IE ; INPUT ENABLE
OE ; OUTPUT ENABLE
RE ; READ ENABLE
RSTR ; RESET READ
RSTW ; RESET WRITE
SRCK ; SERIAL READ CLOCK
SWCK ; SERIAL WRITE CLOCK
WE ; WRITE ENABLE

OUTPUT
Q0 - Q11 ; DATA OUTPUTS

NOTE :

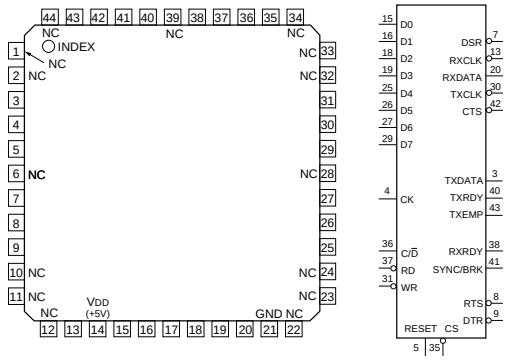
TYPE	VDD
TMS4C2970 TMS4C2972	+5V
TMS4C2973	+3.3V



NOTE :
TMS4C2972 AND TMS4C2973 ALLOW BLOCK RANDOM ACCESS.

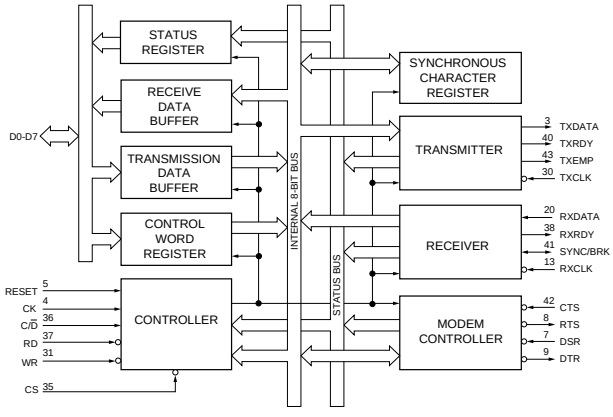
UPD71051GB-10-3B4 (NEC)FLAT PACKAGE

C-MOS SERIAL CONTROLLER
-TOP VIEW-



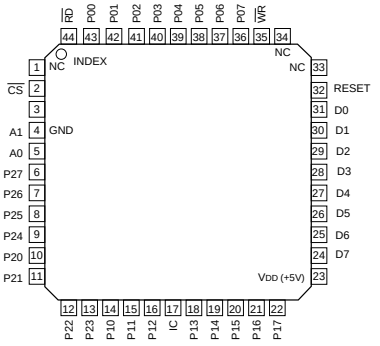
PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL	PIN No.	I/O	SYMBOL
1	—	NC	12	—	NC	23	—	NC	34	—	NC
2	—	NC	13	I	$\overline{RXCLK}$	24	—	NC	35	I	$\overline{CS}$
3	O	TXDATA	14	—	VDD(+5V)	25	I/O	D4	36	I	C/$\overline{D}$
4	I	CK	15	I/O	D0	26	I/O	D5	37	I	$\overline{RD}$
5	I	RESET	16	I/O	D1	27	I/O	D6	38	O	RXRDY
6	—	NC	17	—	IC	28	—	NC	39	—	NC
7	I	DSR	18	I/O	D2	29	I/O	D7	40	O	TXRDY
8	O	$\overline{RTS}$	19	I/O	D3	30	I	$\overline{TXCLK}$	41	I/O	SYNC/BRK
9	O	$\overline{DTR}$	20	I	RXDATA	31	I	$\overline{WR}$	42	I	$\overline{CTS}$
10	—	NC	21	—	GND	32	—	NC	43	O	TXEMP
11	—	NC	22	—	NC	33	—	NC	44	—	NC

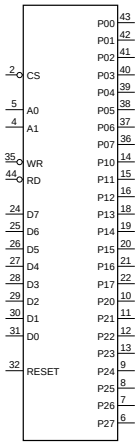
CK ; CLOCK INPUT
CS ; CHIP SELECT INPUT
CTS ; CLEAR TO SEND OUTPUT
C/$\overline{D}$; CONTROL/DATA SELECT INPUT
D0-D7 ; DATA INPUTS/OUTPUTS
DSR ; DATA SET READY INPUT
DTR ; DATA TERMINAL READY OUTPUT
TXCLK ; TRANSMITTER CLOCK INPUT
TXDATA ; TRANSMIT DATA OUTPUT
TXEMP ; TRANSMITTER EMPTY OUTPUT
TXRDY ; TRANSMIT READY OUTPUT
RD ; READ STROBE INPUT
RESET ; RESET INPUT
RTS ; REQUEST TO SEND OUTPUT
RXCLK ; RECEIVER CLOCK INPUT
RXDATA ; RECEIVE DATA INPUT
RXRDY ; RECEIVER READY OUTPUT
SYNC/BRK ; SYNCHRONIZATION/BREAK INPUT/OUTPUT
WR ; WRITE STROBE INPUT



UPD71055GB-10-3B4 (NEC)FLAT PACKAGE

C-MOS PARALLEL INTERFACE UNIT
—TOP VIEW—





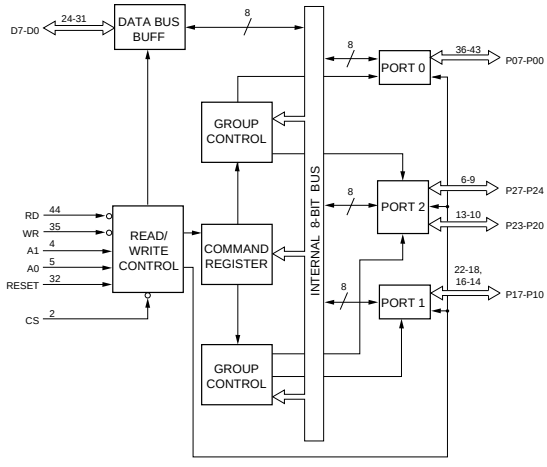
A1, A0 ; ADDRESS
CS ; CHIP SELECT
D7-D0 ; DATA BUS
P07-P00 ; PORT 0

P17-P10 ; PORT 1
P27-P20 ; PORT 2
RD ; READ STROBE
WR ; WRITE STROBE

IC ; INTERNALLY CONNECTED

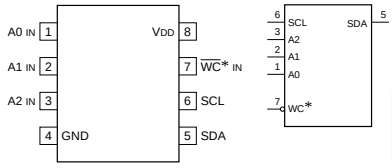
CS	RD	WR	A1	A0	OPERATION	CPU ACTION
0	0	1	0	0	PORT0→DATA • BUS	INPUT
0	0	1	0	1	PORT1→DATA • BUS	INPUT
0	0	1	1	0	PORT2→DATA • BUS	INPUT
0	0	1	1	1	DISABLE	
0	0	0	X	X		
0	1	0	0	0	DATA • BUS→PORT0	OUTPUT
0	1	0	0	1	DATA • BUS→PORT1	OUTPUT
0	1	0	1	0	DATA • BUS→PORT2	OUTPUT
0	1	0	1	1	DATA • BUS→COMMAND REGISTER	OUTPUT
0	1	1	X	X	HIGH IMPEDANCE	
1	X	X	X	X		

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



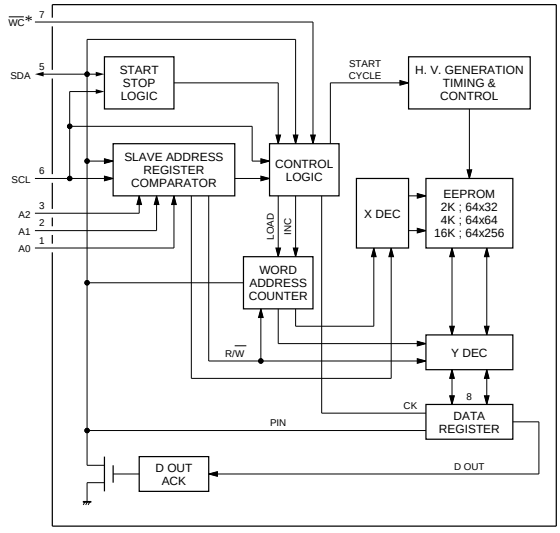
X24164SIC7000 (XICOR)(16K BIT)FLAT PACKAGE

C-MOS SERIAL EEPROM
-TOP VIEW-



NOTE :

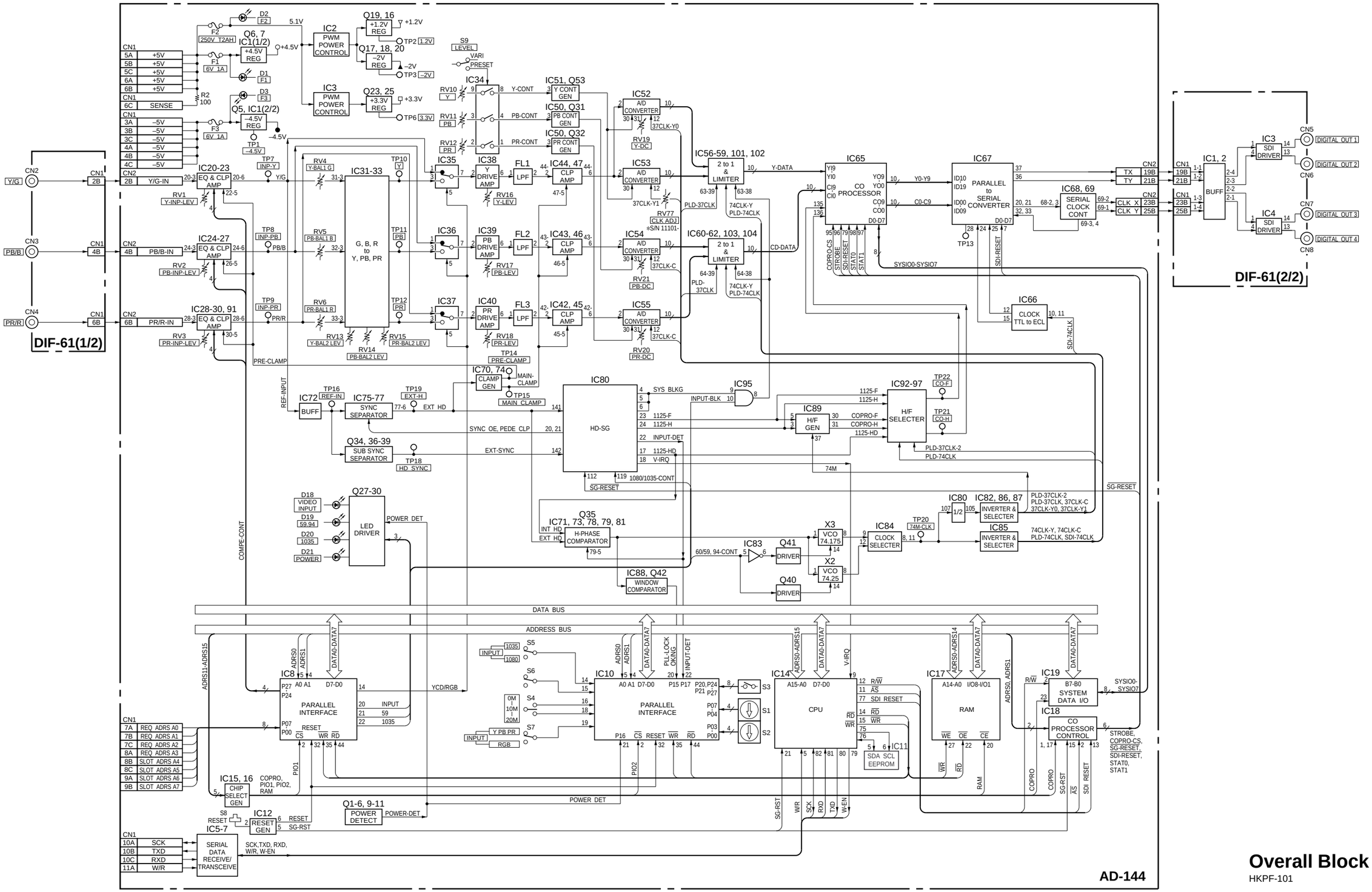
TYPE	VDD
X24C02S-3.0	+2.7 to +5.5V
NM24C16LEM8	+2.5 to +5.5V
OTHER TYPES	+5V



∗ : TEST (at X24164SIC7000)
NC(at NM24C16LEM8)

http://getMANUAL.com

Section 6
Block Diagram



Overall Block
HKPF-101

Section 7
Board Layouts

AD-144(1-665-438-13)

C1 S4
C2 T2
C3 *S4
C4 *T2
C5 Q3
C6 R1
C7 *R3
C8 *Q1
C9 Q2
C10 *Q1
C11 *Q1
C12 Q4
C13 R1
C14 *L2
C15 *M2
C16 *N2
C17 *N2
C18 M3
C19 *M3
C20 M3
C21 *M2
C22 N2
C23 *L3
C24 M3
C25 *L2
C26 M2
C27 *L2
C28 K2
C29 M1
C30 K1
C31 N4
C32 L4
C33 *N4
C34 *L4
C35 P4
C36 M4
C37 *P4
C38 *M4
C39 *P4
C40 *M4
C41 H3
C42 *H3
C43 *H3
C44 H3
C45 *H2
C46 H3
C47 H2
C48 D1
C49 H2
C50 *B1
C51 *H2
C52 B1
C53 *B1
C54 *C1
C55 C1
C56 H1
C57 G1
C58 K3
C59 G4
C60 J4
C61 G4
C62 *K4
C63 *H4
C64 K4
C65 J4
C66 *K4
C67 *H4
C68 *K4
C69 *H4
C70 *E2
C71 *E1
C72 *E5
C73 *B5
C74 A3
C75 *A3
C76 *A1
C77 *D5
C78 *C3
C79 *B3
C80 *B2
C81 *D4
C82 *C4
C83 G4
C84 F5
C85 *T5
C86 *T5
C87 *T4
C88 *T4
C89 *S4
C90 R5
C91 *S4
C92 *S4

C93 R5
C94 *R5
C95 *T7
C96 *T6
C97 *T6
C98 *T6
C99 *S6
C100 R7
C101 *S6
C102 *R4
C103 *R5
C104 *S6
C105 R7
C106 *R6
C107 *T8
C108 *T8
C109 *T7
C110 *T7
C111 *S7
C112 R8
C113 *S7
C114 *S7
C115 R8
C116 *R8
C117 H6
C118 *Q5
C119 *Q6
C120 *Q8
C121 *Q4
C122 *Q6
C123 *Q7
C124 *Q6
C125 *Q7
C126 *Q5
C127 *Q5
C128 *Q6
C129 *Q7
C130 *G7
C131 *P5
C132 *P6
C133 *P8
C134 *P5
C135 *P7
C136 *P8
C137 *P4
C138 *P6
C139 *P7
C140 *N5
C141 *N6
C142 *N8
C143 *N5
C144 *N5
C145 *N6
C146 *N8
C147 *N6
C148 *N7
C149 *N5
C150 *N6
C151 *N7
C152 *N5
C153 *N6
C154 *N7
C155 *M5
C156 *M4
C157 *K8
C158 *H8
C159 *L8
C160 *K8
C161 *L8
C162 *K8
C163 *K8
C164 H8
C165 *H8
C166 *L8
C167 *L8
C168 *H7
C169 *K8
C170 *L8
C171 *H7
C172 *M6
C173 *K8
C174 *L8
C175 *H8
C176 *M8
C177 *M5
C178 *M8
C179 *M7
C180 M6
C181 M5
C182 M8
C183 *M6
C184 *M5

C185 *M7
C186 H6
C187 H7
C188 G7
C189 *H6
C190 *H7
C191 *H7
C192 *H6
C193 *H6
C194 L8
C195 *H8
C196 L6
C197 *G8
C198 M4
C199 *J6
C200 *J7
C201 *H8
C202 J9
C203 H9
C204 L9
C205 K9
C206 J8
C207 H8
C208 L8
C209 K8
C210 J8
C211 H8
C212 L8
C213 K8
C214 *K8
C215 J8
C216 H8
C217 L8
C218 K8
C219 *J8
C220 *H8
C221 *L8
C222 *H8
C223 *J8
C224 *G8
C225 *G8
C226 *K8
C227 *L8
C228 *K8
C229 *K8
C230 *J9
C231 *J9
C232 *H9
C233 *L9
C234 *L9
C235 *K9
C236 *G9
C237 *K9
C238 K10
C239 J10
C240 H10
C241 H10
C242 L10
C243 L10
C244 K10
C245 J11
C246 H11
C247 L11
C248 K11
C253 *N10
C254 *N10
C255 *N10
C256 *N10
C257 *N11
C258 *M10
C259 *M10
C260 *M10
C261 *M10
C262 *N9
C263 *N9
C264 *N9
C265 *N9
C266 *N9
C267 *N11
C268 *N11
C269 *P9
C270 *P10
C271 *P9
C272 *P9
C273 *P10
C274 R10
C275 *P10
C276 *Q10
C277 *P10
C278 *Q10
C279 *R11
C280 *R10

C281 *P9
C282 *P10
C283 *Q11
C284 Q11
C285 *Q9
C286 *Q11
C287 Q11
C288 *Q11
C289 *Q11
C290 *Q10
C291 *Q10
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C293 *Q11
C294 *Q10
C295 *Q9
C296 *R10
C297 *Q10
C298 *Q10
C299 *Q9
C300 *Q10
C301 *R10
C302 *Q9
C303 *Q9
C304 *L11
C305 Q10
C306 Q10
C307 *Q10
C308 R9
C309 S9
C310 R9
C311 S10
C312 D6
C313 D7
C314 D6
C315 *B7
C316 *C7
C317 C6
C318 C7
C319 B9
C320 U4
C321 U5

C373 *B6
C374 *M6
C375 *M6
C376 *R6
C377 *R6
C378 *R7
C379 *R8
C380 *E1
C381 *B4
C382 *A2
C383 *D5
C384 D7
C385 *C8
C386 *G11
C387 F10
C388 F8
C389 F7
C391 F6
C392 *F6
C393 E6
C394 *B6
C395 *B6
C396 *R10
C397 *H11
C398 F10
C399 *J11
C400 *K11
C401 F5
C402 F4
C403 *H11
C404 R5
C405 R7
C406 R8
C407 *K11
C408 *G9
C409 A2
C410 *F5
C411 *B5
C412 *C3
C413 *R4
C414 *R4
C415 *R6
C416 *R6
C417 *R7
C418 *R7
C419 M6
C420 M6
C421 *M7
C422 *M7
C423 *M8
C424 *M8
C425 *F7
C426 *G6
C427 *C6
C428 *B6
C429 *C10
C430 *C10
C431 H9
C450 *A2
C501 F9
C502 *G9
C720 R4
C721 T5
C722 R6
C723 R7

CN1 U2
CN2 U9
CN3 Q9

CP1 R11

D1 U1
D2 U1
D3 U1
D4 *R1
D5 Q1
D6 Q1
D7 Q1
D8 *M3
D9 *P2
D10 *L3
D11 *K2
D12 N1
D13 L1
D14 *C1
D15 K1
D16 F1
D17 P1
D18 A3
D19 A3
D20 A2

D21 A2
D22 *C4
D24 *R11
D25 *G6
D26 *B8
D27 *F6
D28 C8

E1 S1
E2 L4
E3 P7
E4 H7

FB1 *N9
FB2 *N10
FB3 *N10
FB4 *M9
FB5 *N9
FB6 *N9

FL1 J6
FL2 L6
FL3 K6

IC1 Q2
IC2 M3
IC3 H3
IC4 B1
IC5 E3
IC6 E2
IC7 E1
IC8 E4
IC9 B4
IC10 B4
IC11 A1
IC12 A2
IC13 D5
IC14 C2
IC15 D4
IC16 D5
IC17 C4
IC18 G5
IC19 F5
IC20 T5
IC21 S4
IC22 R4
IC23 R5
IC24 T6
IC25 S6
IC26 R6
IC27 R6
IC28 T8
IC29 S7
IC30 R7
IC31 Q5
IC32 Q6
IC33 Q8
IC34 H6
IC35 P5
IC36 P6
IC37 P8
IC38 N5
IC39 N6
IC40 N8
IC41 M5
IC42 K8
IC43 L8
IC44 H8
IC45 M8
IC46 M7
IC47 M5
IC48 M6
IC49 M8
IC50 H6
IC51 H8
IC52 J9
IC53 H9
IC54 L9
IC55 K9
IC56 K10
IC57 J10
IC58 H10
IC59 H10
IC60 L10
IC61 L10
IC62 K10
IC65 N10
IC66 N11

IC67 Q10
IC68 Q11
IC69 R9
IC70 D6
IC71 B7
IC72 U5
IC73 B8
IC74 C6
IC75 F6
IC76 E6
IC77 E7
IC78 C9
IC79 C10
IC80 D9
IC81 C11
IC83 F11
IC84 F11
IC85 G11
IC86 F9
IC87 F8
IC88 C8
IC89 B6
IC90 D7
IC91 R8
IC92 H11
IC93 J11
IC94 F10
IC95 K11
IC96 H11
IC97 K11
IC101 J10
IC102 H10
IC103 L10
IC104 K10

L1 T4
L2 S2
L3 R3
L4 S1
L5 M1
L6 K1
L7 P2
L8 L2
L9 N4
L10 L4
L11 E1
L12 H1
L13 K2
L14 G2
L15 K4
L16 H4
L17 *E5
L18 *B5
L19 *C3
L20 *J8
L21 *G8
L22 *L8
L23 *K8
L24 *J9
L25 *H9
L26 *L9
L27 *K9
L28 *B7
L29 *C6
L30 *F7
L31 *F6
L32 *C10
L33 *C10
L34 *F11
L35 *F11
L36 *F11
L37 *F11
L38 *C8
L39 *A2
L40 *S11

Q1 Q1
Q2 Q1
Q3 Q1
Q4 P1
Q5 P1
Q6 Q4
Q7 *Q2
Q8 R1
Q9 P1
Q10 Q1
Q11 Q1
Q12 P1
Q13 *L3
Q14 *L2
Q15 *L2
Q16 *N1

Q17 *L1
Q18 *L1
Q19 N1
Q20 L1
Q21 C1
Q22 *J1
Q23 *G1
Q24 J1
Q25 G1
Q26 *N1
Q27 A3
Q28 A3
Q29 A2
Q30 A2
Q31 *H6
Q32 *H7
Q33 *G8
Q34 *G6
Q35 *B8
Q36 *G7
Q37 *G7
Q38 *F7
Q39 *G7
Q40 *D10
Q41 *D11
Q42 *C7

R1 *U1
R2 *T2
R3 *U1
R4 *U1
R5 *Q1
R6 *Q1
R7 *Q1
R8 *Q1
R9 *Q1
R10 *Q1
R11 *Q1
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R264 K5
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R703 *J10
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R705 G9

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R711 K9
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RB3 F4
RB4 F4
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RB8 J9
RB9 J9
RB10 J9
RB11 H9
RB12 H9
RB13 G9
RB14 L9
RB15 L9
RB16 L9
RB17 K9
RB18 K9
RB19 K9
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RS2 *D1
RS3 G11
RS4 G11
RS9 *G8
RS10 *G9
RS11 *G8
RS12 *G9
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RS23 *J11
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RS25 *K11
RS26 L10
RS27 L10
RS28 *G8
RS29 *G8
RS31 *L11
RS32 *L11
RS33 *L11
RS34 *L11
RS64 *J11

RV1 S5
RV2 S6
RV3 S8
RV4 Q5
RV5 Q6
RV6 Q8
RV10 A9
RV11 A9
RV12 A10
RV13 Q5
RV14 Q7
RV15 Q8
RV16 N5
RV17 N7
RV18 N8
RV19 L5
RV20 L8
RV21 L7
RV22 C7
RV30 S10
RV77 G9
RV78 T6

S3 B10
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S5 A5
S6 C11
S7 A6
S8 C11
S9 A7

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TP6 H5
TP7 T4
TP8 T6
TP9 T7
TP10 Q5
TP11 Q7
TP12 Q8
TP13 L11
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X3 D11

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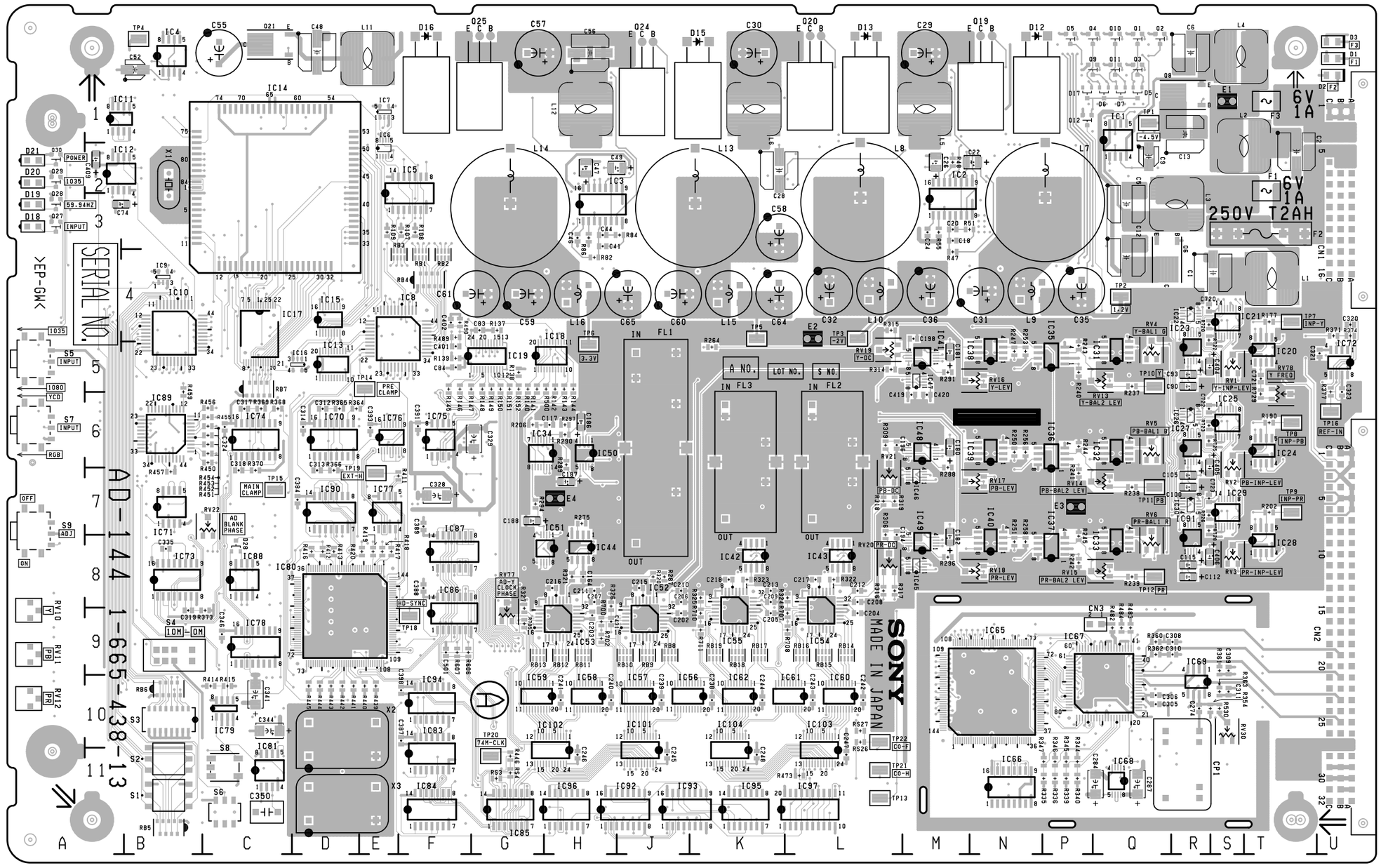
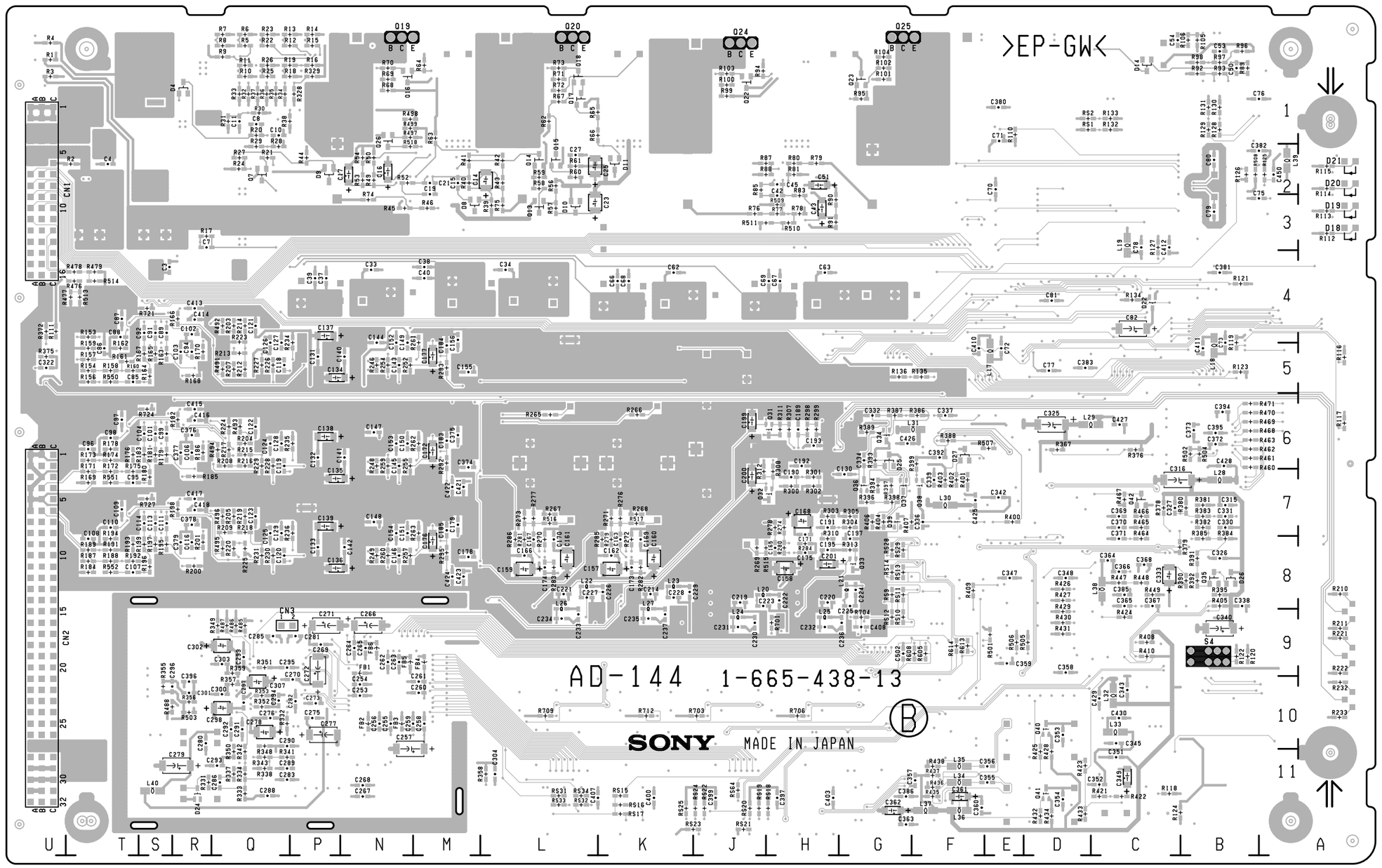


AD-144 -A SIDE-
SUFFIX: -13



AD-144 -B SIDE-
SUFFIX: -13

DIF-61(1-665-439-12)

C1	E3
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C3	E2
C4	E3
C5	E2
C6	E2
C12	D3
C13	D3
C14	D3
C15	C2
C16	D2
C17	D2
C18	D2
C19	C1
C20	D1
C21	C2
C22	D2
C23	C1
C24	D1
C25	C1
C26	D1
C27	D1
C28	E1
C29	C1
C30	C1
C31	D1
C32	D1
CN1	D3
CN2	A1
CN3	B1
CN4	B1
CN5	C1
CN6	D1
CN7	D1
CN8	E1
D1	C2
D2	D2
IC2	D2
IC3	C2
IC4	D2
L1	E3
L2	E2
L3	E2
R8	D3
R9	D3
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R22	C2
R23	D2
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R28	D2
R29	D2
R30	C1
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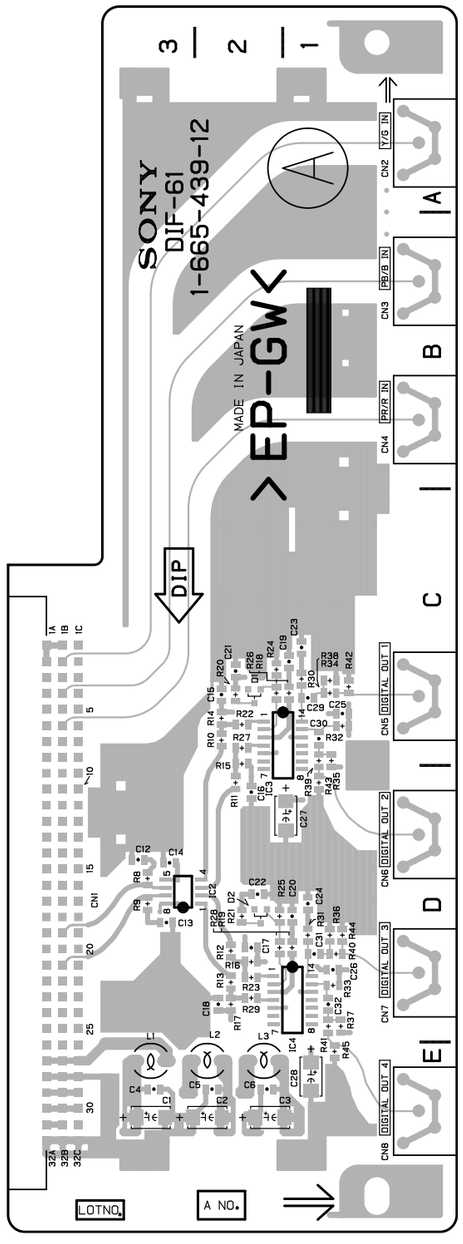
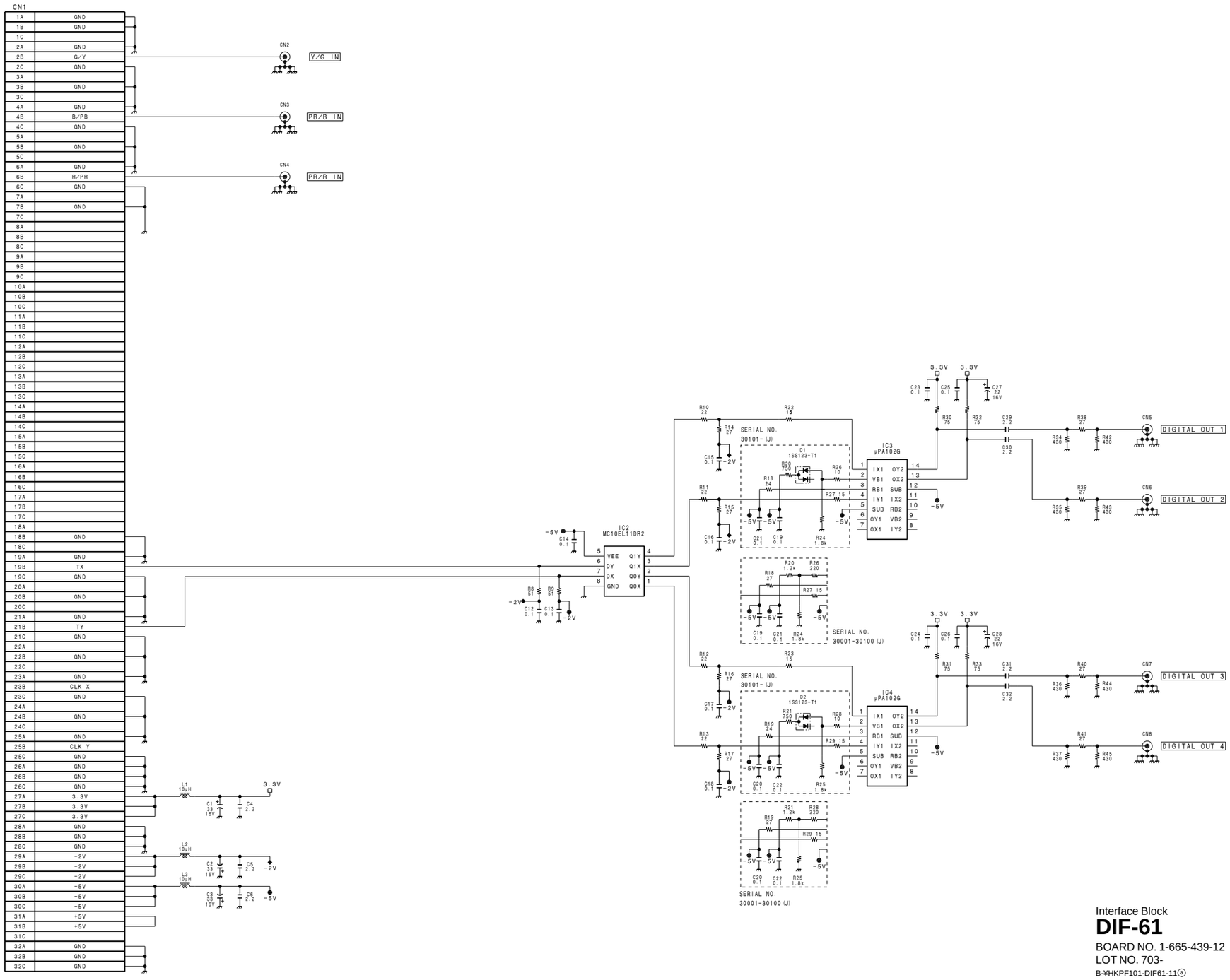
R43	D1
R44	D1
R45	E1



DIF-61 -A SIDE-
SUFFIX: -12

Section 8
Schematic Diagrams

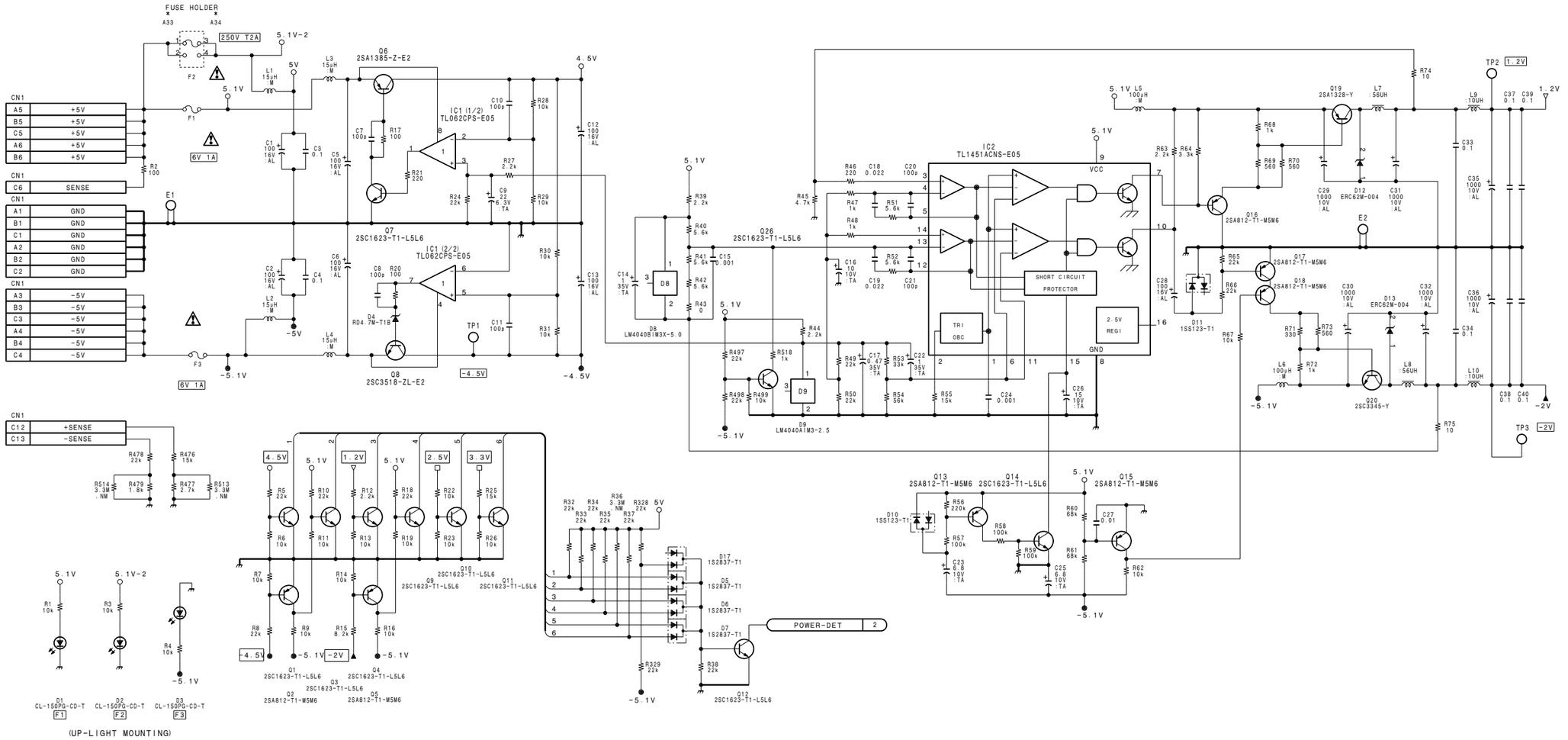
HKPF-101 (UCJ)



Interface Block
DIF-61
BOARD NO. 1-665-439-12
LOT NO. 703-
B-¥HKPF101-DIF61-11ⓐ

AD-144 (1/5)

HKPF-101 (UCJ) : S/N 12001 and Higher



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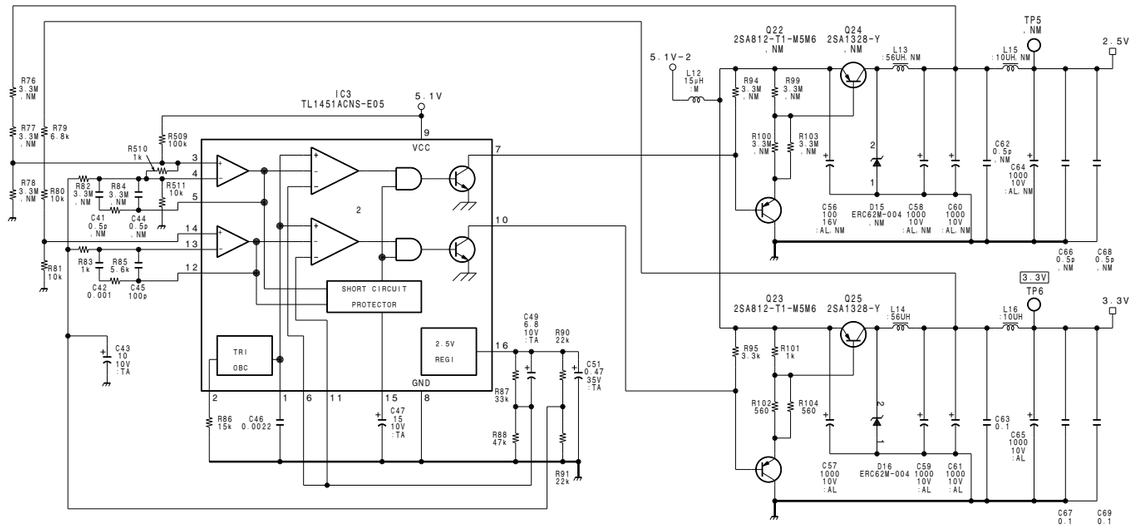
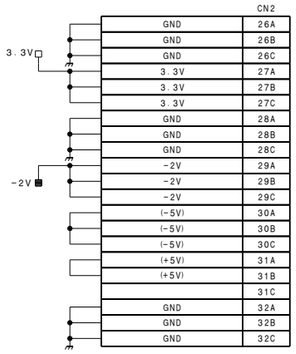
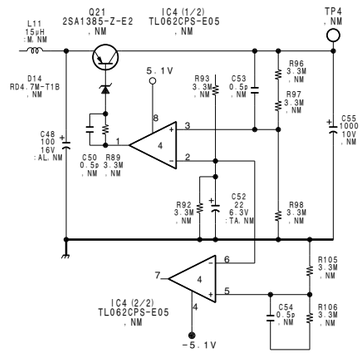




	CN2	
3.3V	GND	26A
	GND	26B
	GND	26C
	3.3V	27A
	3.3V	27B
	3.3V	27C
	GND	28A
	GND	28B
	GND	28C
-2V	-2V	29A
	-2V	29B
	-2V	29C
	(-5V)	30A
	(-5V)	30B
	(-5V)	30C
	(+5V)	31A
	(+5V)	31B
		31C
	GND	32A
	GND	32B
	GND	32C



Power Block

AD-144 (1/5)

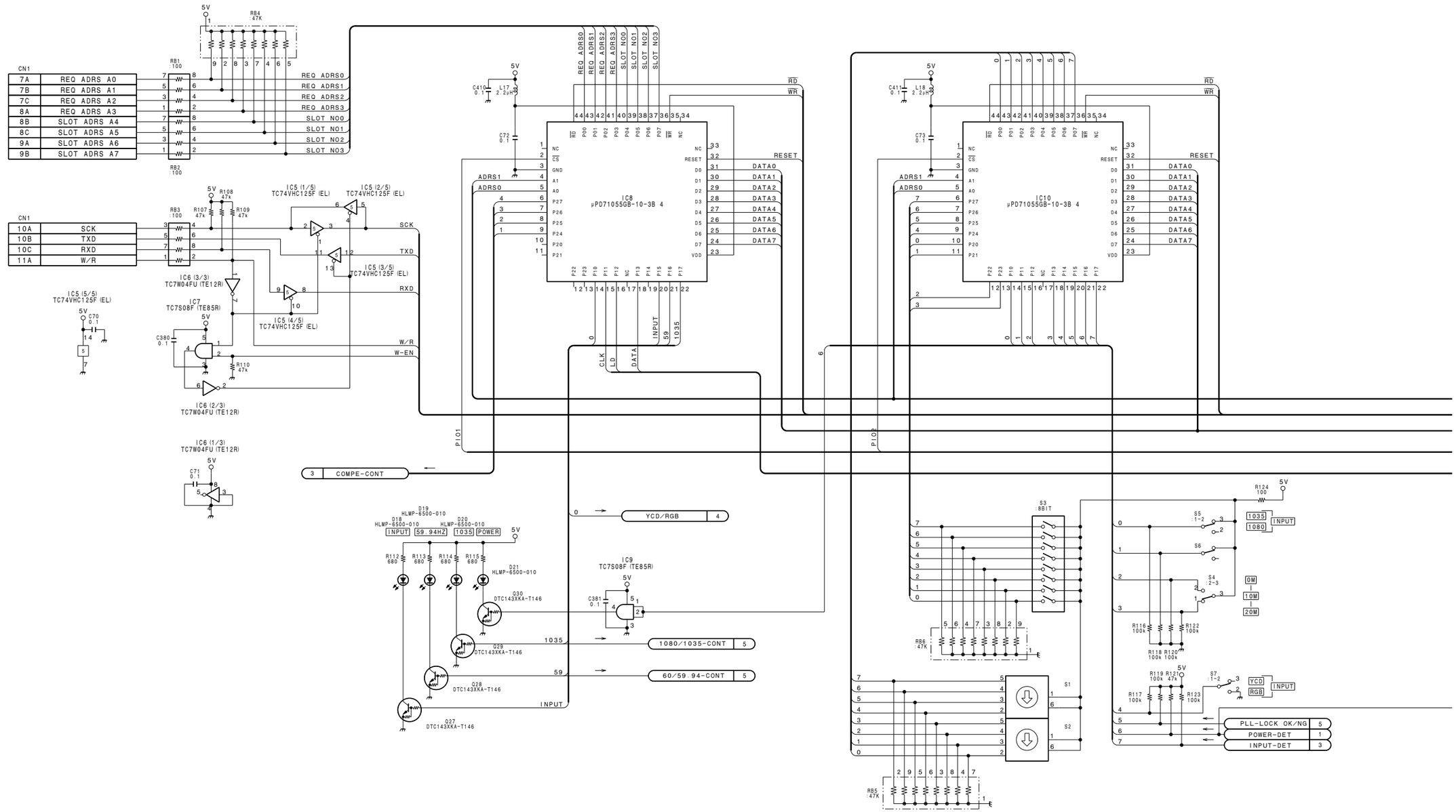
BOARD NO. 1-665-438-13

LOT NO. 711-

B-¥HKPF101-AD144-13ⓐ

AD-144 (2/5)

HKPF-101 (UCJ) : S/N 12001 and Higher



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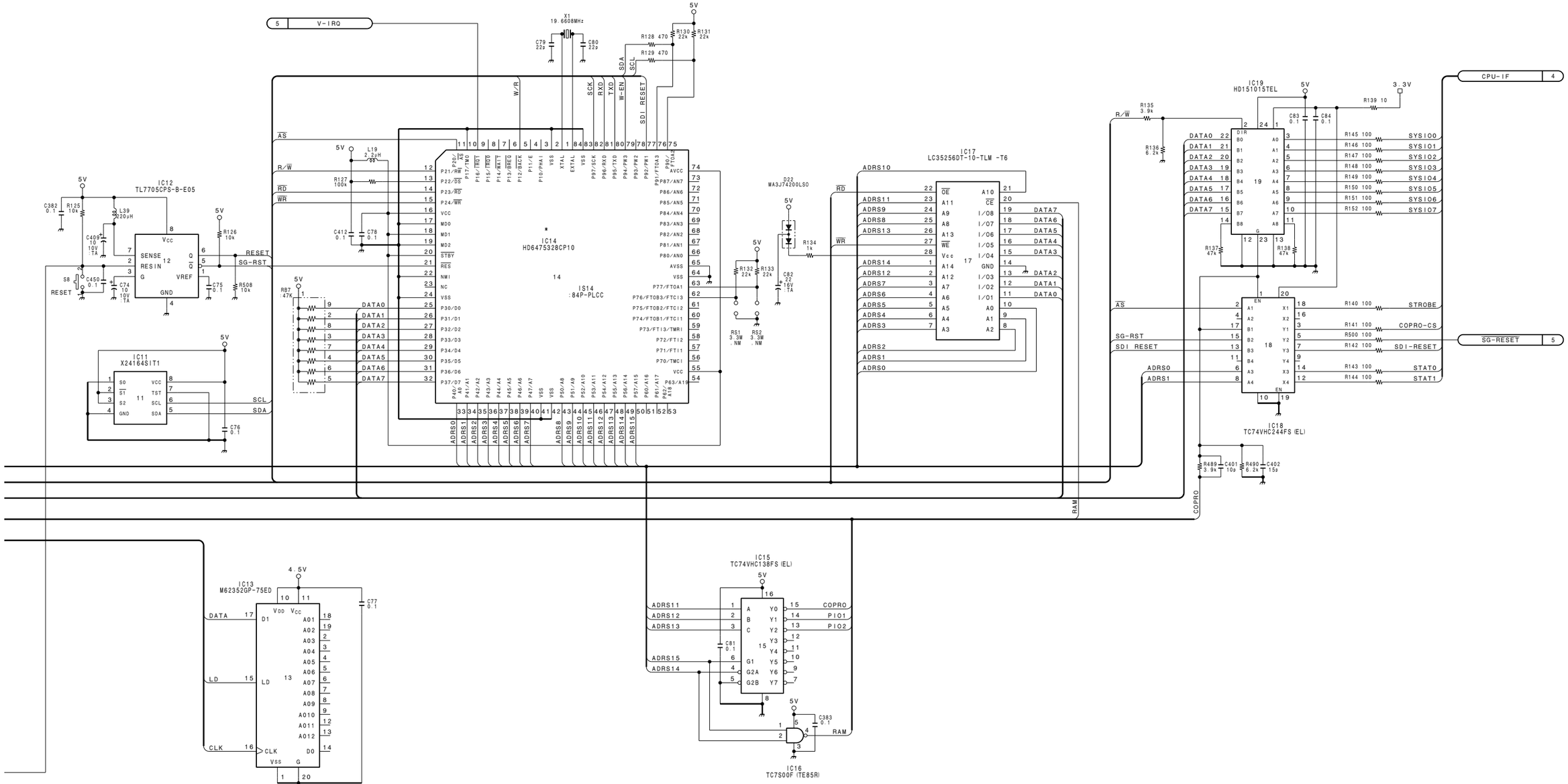
AD-144 (2/5)



Auto Control Block

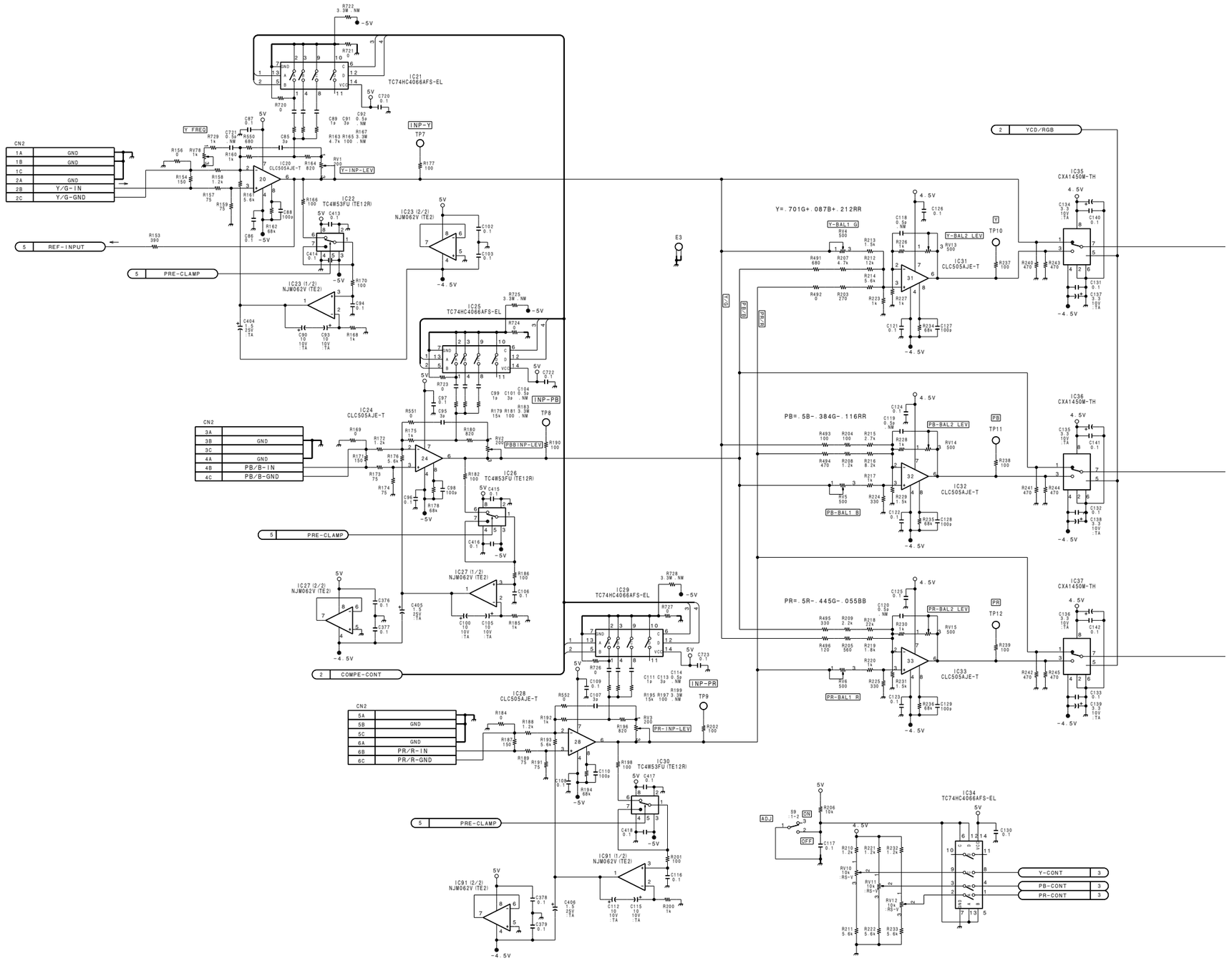
AD-144 (2/5)

BOARD NO. 1-665-438-13
LOT NO. 711-

B-¥HKPF101-AD144-13Ⓔ

AD-144 (3/5)

HKPF-101 (UCJ) : S/N 12001 and Higher



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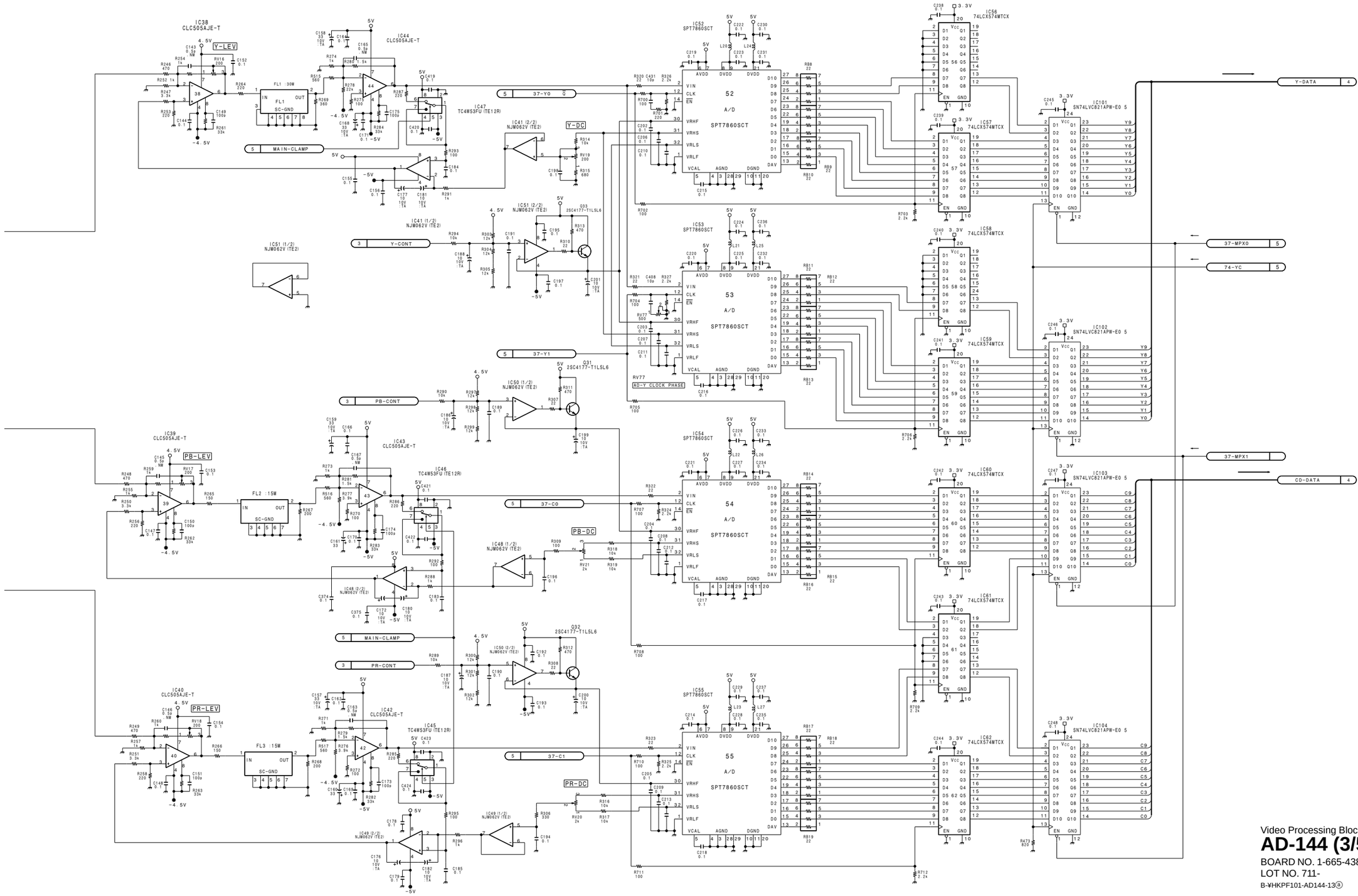
AD-144 (3/5)

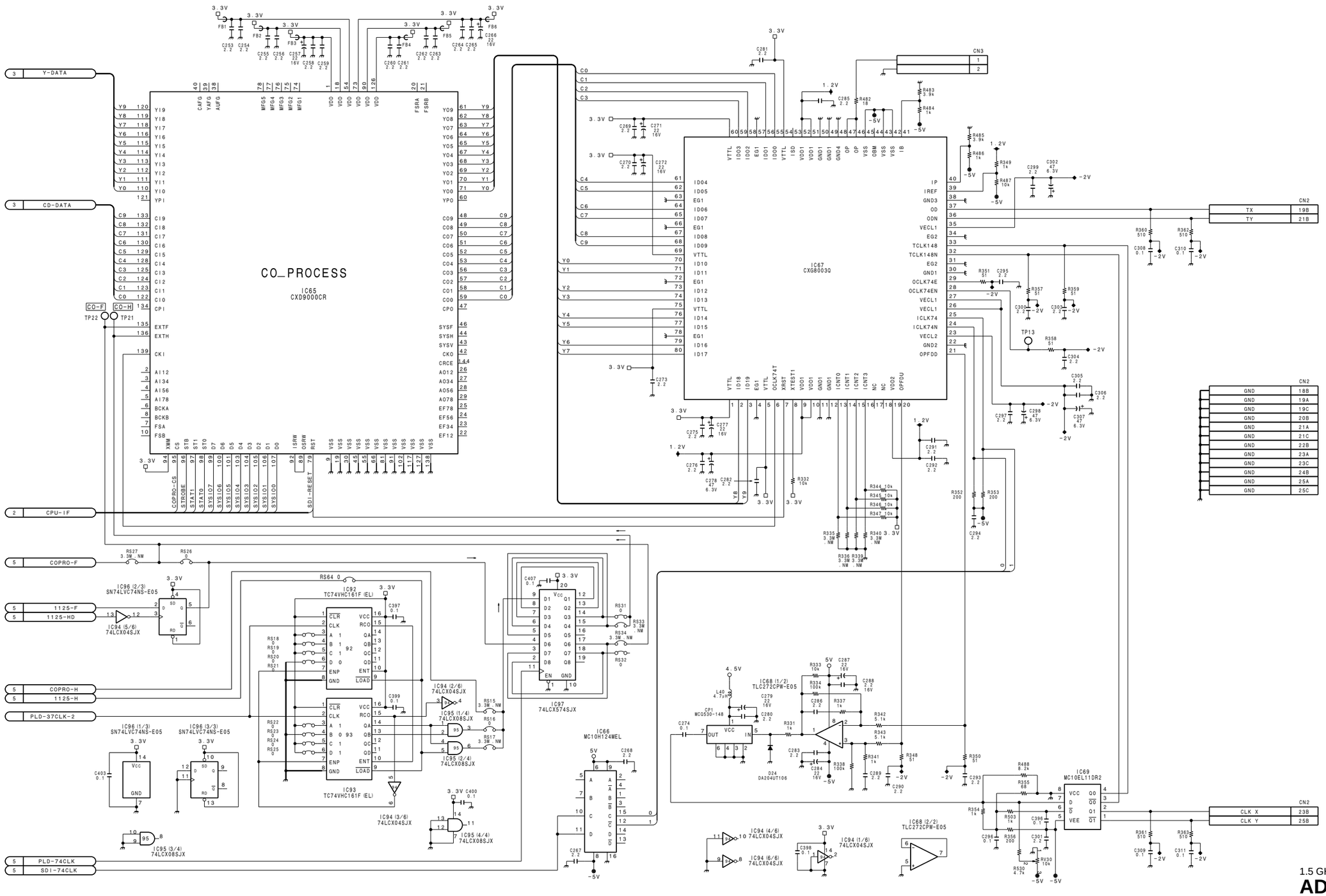


Video Processing Block

AD-144 (3/5)

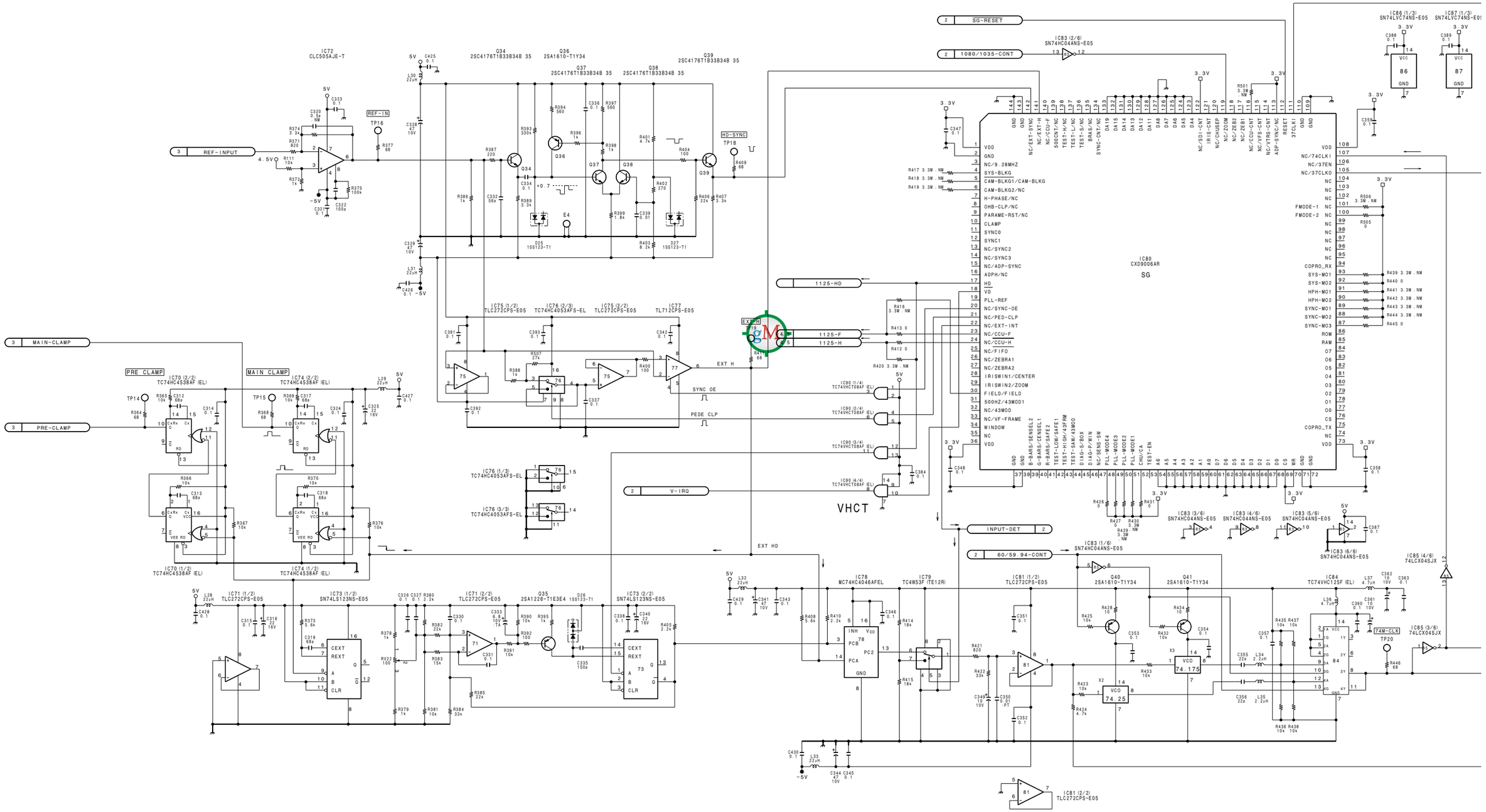
BOARD NO. 1-665-438-13
LOT NO. 711-
B-¥HKPF101-AD144-13Ⓐ

HKPF-101 (UCJ) : S/N 12001 and Higher

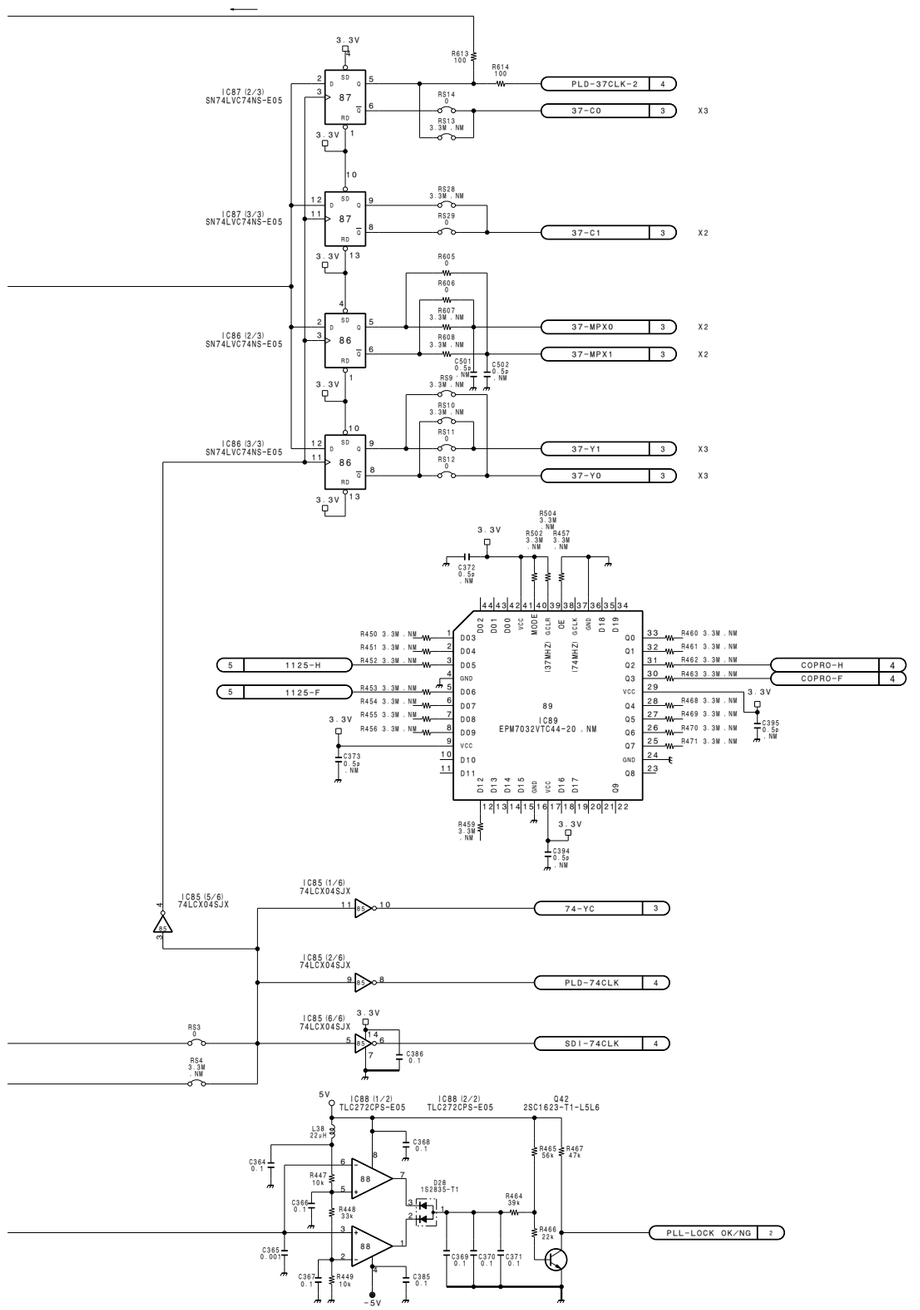


AD-144 (5/5)

HKPF-101 (UCJ) : S/N 12001 and Higher



AD-144 (5/5)



Signal Generator Block

AD-144 (5/5)

BOARD NO. 1-665-438-13
LOT NO. 711-
B-¥HKPF101-AD144-13ⓐ

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Broadcasting & Professional Systems Company

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